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## WOMEN AND TECH

UNBELIEVABLE TECH INVENTED BY WOMEN, WHY WE  
NEED MORE GEEKY GIRLS IN THIS WORLD, AND  
**IS TECHNOLOGY GENDER-NEUTRAL?**





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# Is this the beginning of the end?

Out of the hundreds of news feeds that make it into my inbox, one seemingly innocuous item last month just seemed to jump right out at me. There wasn't anything particularly insidious about it, and it certainly wasn't the sensational "India bans porn" headline that sent everyone and their uncles (literally) into a tizzy. No, this was truly low key. It was a news report announcing the successful deployment of NEC's face-recognition technology in Surat. The algorithm developed by NEC (whose monitors we've always liked) is capable of analysing video feeds in real time, cross referencing those feeds with existing mugshot databases, and triggering an alert when a particular person of interest has been identified.

The fascinating bit was that most of the news items surrounding this announcement were celebratory. And perhaps they should be. The idea of a watchful, all-seeing eye, deterring criminal activity isn't something most people would complain about. I know if my friends or family were kidnapped (for example) I would be very grateful if NeoFace was able to track down the perpetrators and bring my loved ones back to me safe and sound.

Yet, somehow I felt queasy about the whole thing.

In India, we don't have privacy advocacy groups that are vocal enough. In fact, by and large, awareness about privacy issues is pretty low. Many in India would argue that we have better (or worse) things to worry about. But, I cannot let this go. Call me paranoid (or well read) but somehow this theme is all too familiar to me. This is the first step towards making insidious technology a reality – one that that we can, fortunately for now, only see in movies. You guys remember the all-powerful cellphone Sonar from Dark Knight or "God's Eye" from Furious 7 right?

In most developing countries, loss of privacy would be looked at as a necessary if not welcome tradeoff. The argument is that if you have nothing to hide (read: you are not a terrorist) what are you afraid of?

Personally, I'm ok with *something* watching me as I go about performing my mundane daily activities. Despite the risk of the machine get-

ting bored to death, I don't mind this brand of surveillance because a machine is largely infallible (apart from a few statistical false positives of course). However, when such power rests in the hands of a few (corruptible) humans, I'm worried. Systems are never autonomous, in fact they're designed with overrides in place from their very inception. How easy would it be to add the mugshot you see on this page into a criminal database? For now it'll just inconvenience me and Surat will quickly drop to the bottom of my "must-visit" bucket list. But there are far reaching consequences.

At the risk of going Snowden on you, I'll urge you to think of those extrapolations. State-sponsored blackmail, propaganda enforcement, your freedom of movement being restricted – just simply way too much power resting in the hands of the state.

We've been accused of being gloomy in our columns before – particularly Jayesh and I. And at the risk of receiving similar brickbats, I still felt the need to draw the attention of the tech elite of the country (you readers) to this issue. I'm not saying we should go out and hurl rocks at every surveillance camera we see. All I'm saying is we need to appreciate that technology is just a tool. In the right hands, it's a wand of progress and in the wrong ones it could be a weapon of subversion. Our job is to be constantly aware of this. Because only with awareness can we can put pressure on scrutiny and on enforcing audits when these systems are designed. It is our only defence against subversion. If you are signing a deal with the devil you'd better pay attention to the fine print.

Is Surat's implementation of large-scale facial recognition and tracking a step towards progress, or a fall into eventual dystopia? You know where to reach me with your views. Happy reading. 🇮🇳



**Siddharth Parwatay**  
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**"Systems are never autonomous, in fact they're designed with overrides in place from their very inception. How easy would it be to add the mugshot you see on this page into a criminal database?"**

A handwritten signature in black ink, appearing to read 'Siddharth Parwatay'.

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SEPTEMBER 2015 VOLUME 15 | ISSUE 09

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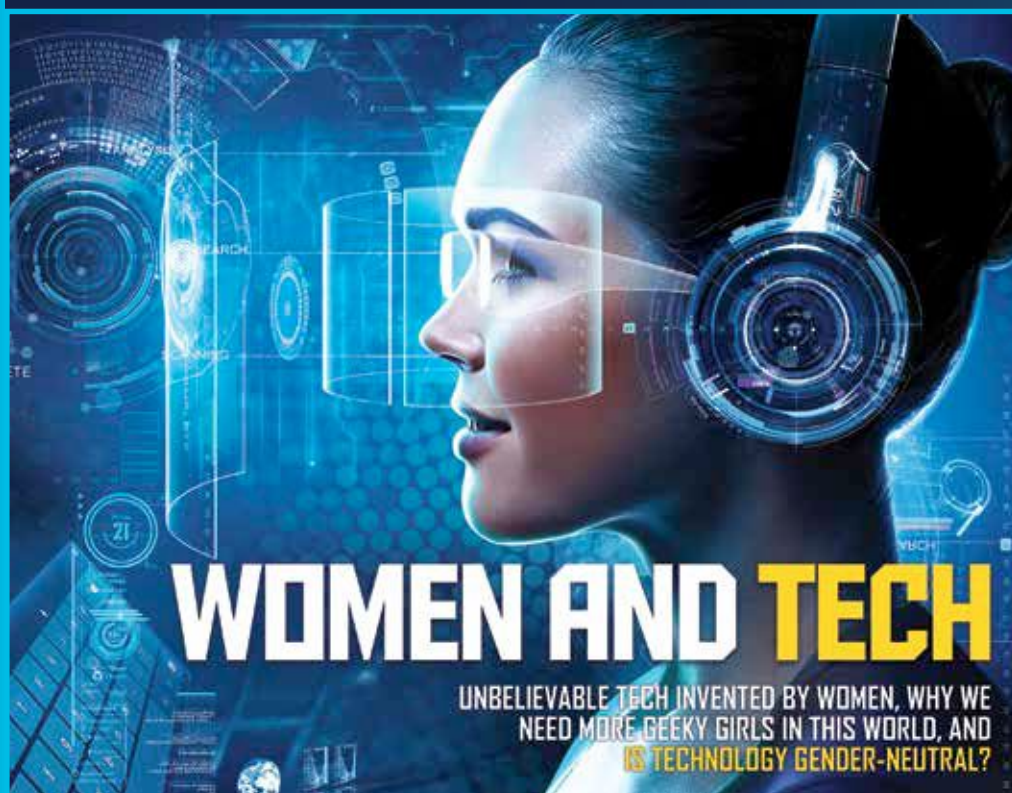
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UNBELIEVABLE TECH INVENTED BY WOMEN, WHY WE NEED MORE GEEKY GIRLS IN THIS WORLD, AND IS TECHNOLOGY GENDER-NEUTRAL?

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Women innovators played an important role in shaping the history of technological advancements. This is their story.

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In the 21st century, when technology's evolving at such a rapid stage, we try to introspect and wonder – is technology gender-biased?

**TRIED & TESTED**



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- Ark: Survival Evolved
- Burn it - Just Cause 3
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- Dark Souls III Reveal
- DOOM
- Elite: Dangerous
- Forza Motorsport 6: Racing in the Rain
- Halo 5 Multiplayer
- Halo 5: Guardians Limited Edition Hardware
- Mad Max
- Metal Gear Solid V: The Phantom Pain
- Mirror's Edge Catalyst Gameplay
- Quantum Break Trailer
- Rainbow Six Siege
- Scalebound
- Star Wars Battlefront Fighter Squadron

### NVIDIA Graphics Drivers

- Install the latest NVIDIA Desktop Graphics Drivers (32/64-bit).

### The String Theory

- Sadly, July's Dmystify dedicated to the String Theory had many errors involving values and powers. This PDF has been cleansed from those sins for you to read through and marvel once again at the wonders of the String Theory.

### Games

- RED Fuse Rolling Explosive Device Demo
- Retrobooster Demo
- Silver Creek Falls - Chapter 1
- The Bug Butcher Demo
- the static speaks my name
- Time Clickers

### Make it look like Windows 10

If you are still sceptical about updating your existing Windows 7/8/8.1 system to Windows 10, here are a few tools and software that will incorporate and duplicate certain features, making your older operating system look like Windows 10.

- AquaSnap
- ConEmu
- Dexpot

### 3DMark

- 3DMark has been updated with a feature called the API Overhead feature test which is the world's first independent test for measuring differences in DirectX 12, DirectX 11 and Mantle API performance.



# Trip down nostalgia lane...



**Jayesh Shinde**  
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**"The more I think about it and stretch my brain back in time, I am convinced that most of my happiest memories are all closely surrounded by technology and gadgets. And I wouldn't have it any other way."**

Last month, while trying to capture a video of my baby daughter's expert handling of a touch-enabled Windows 8 tablet device, I remember smiling to myself and wondering – will she be able to recollect her time spent on the device and her earliest tech distractions well into her adult life? Sure, the video I captured of her would go a long way in acting as a trigger in the future, prompting her to access one of her earliest self-preserved memories, but would she really really remember? Only time would tell, I guess.

Of course, that led me to think really hard and jog my memory for some of my most memorable technology-related memories. Ever since I was a kid, I can vividly remember the introduction of a colour television in our home, because up until then I was only ever used to watching moving visuals in black and white. That was a big moment for me, personally. I can never forget having to live with only 10 channel buttons and a tuner for anything extra – those were the days!

Around the same time I remember creating my first real mixtape, thanks to a friend's Philips audio system that allowed for side-by-side and live radio frequency recording – I can't quite recollect the model number of the set now, and neither can my friend. But both of us remember the hours we spent trying to assemble perfect dance hits cassettes with a mix of Hindi and English songs. Oh the number of vacation hours we spent saving pocket money, buying higher quality recording cassettes for flawless playlists!


Then when VCRs came into vogue, I remember convincing friends to pool up our funds to go rent the latest English movie videocassettes (Rs 10 per day at the time!) – we watched a lot of action movies back in the day, starring Arnold, Sylvester Stallone, and Jean Claude Van Damme. I also remember how one day we rented the movie Hackers and were blown away by the potential of an Internet-connected computer terminal. Needless to say, that was the first time I ever saw glimpses of the Internet. Ever. But, I'm getting ahead of myself.

After dabbling with computers in school and at a friend's place, I fondly remember the

day when I convinced my father to get me my first computer. I didn't sleep the whole night! My excitement levels were through the roof. Of course, I remember putting in a bunch of Digit (at the time CHIP) CDs and trying all the games on them. And the myriad range of software and apps. Very soon my 20 GB hard drive crashed, and I realized the importance of backing up data – which meant saving up more money to buy a CD-ROM writer.

Technology had me pretty much hooked by this time, and I was having a ball of a time. My SEGA Mega Drive II was the object of envy among my friends, dial-up Internet was expanding my frontiers of knowledge (in every imaginable subject!) like never before, and my parents weren't yet complaining about the electricity bill yet. And all this while, technology was transforming itself to help me create more memories – switching from a curved picture tube tele to a flat screen picture tube TV, walkman, CD player, DVD writer, discrete GPU, second and third computer, first phone, first laptop, newer gaming console, LCD TV, wireless Internet, first smartphone, and the list goes on and on.

The more I think about it and stretch my brain back in time, I am convinced that most of my happiest memories are all closely surrounded by technology and gadgets. And I wouldn't have it any other way. And I'm not done quite yet. I'm looking forward to building more memorable, happy technology memories in the coming days. There's so much to look forward to – especially IoT and VR.

I'm sure you have your fair share of tech-related memories dating back to your childhood days. I'd love to hear from you, should you feel the need to share them with me. You know where to email me. Happy tech memories! 

Let me know your thoughts on this column at: [facebook.com/jayesh.shinde](https://facebook.com/jayesh.shinde) / [@jshinde](https://twitter.com/jshinde) | [jayesh.shinde@digit.in](mailto:jayesh.shinde@digit.in)



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# Enough pink already

If there's one subject I have a lot of arguments about – online or in person – it's gender equality. I'm a feminist, but I've been called a male basher, anti-male and some much more colourful words that can't be printed. Let me go on record to state that I'm not a feminazi-type feminist, who, sadly, get a lot more air-time than they should, and in my opinion, cause damage to the cause of gender equality. However, that's not a rabbit hole I want to fall into right now.

Instead, I'm looking to get your thoughts on the role women are (or should be) playing in technology today. Our cover story looks at the role women have played in technology thus far, the kind of challenges they face in the tech world, the things some enterprising women are doing in this sphere and of course, the way we think technology will be the ultimate gender equaliser. This column, however, is about the sacrifices that need to be made first, how you can help balance the scales and why you should.

Life in the US before 1972 was pretty good. People were doing well, almost all men worked, women too, and by and large, life was somewhat like it is in India right now. Men provided, and women supplemented income but were also tasked with looking after the kids. It was a male dominated society, especially when it came to business and sports. Thus, it was obvious to people that since more boys participated in sports and went to college, more money should be spent on education and sports for boys. Perfectly logical, yes?

No. The US Congress passed Title IX of the Education Amendments in 1972, which simply said: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance."

What this meant was that no school could have a school science program that was targeted at boys, or spend five times as much on a boys' basketball team as a girls'...you get the picture.

Before 1972, women were actively discouraged from taking advanced math classes, or carpentry, and weren't given the same facilities to train for sports as boys. In fact, they weren't even encouraged to participate. The lack of interest was taken as a reason to provide no facilities and discourage interest, whereas, today, we know it is the other way around.

Just consider the changes that happened in the US since then:

The number of female athletes in high school went up from around 300,000 in 1972 to 3.2 million in 2011. That's 10 times more, or a 1000+ per cent increase. And no, it wasn't just a population rise, because the figure for boys went up just 20 per cent in the same period (from 3.6 to 4.4 million).


When it comes to doctorates, in 1972 a mere 11 per cent of PhDs were awarded to women in the US. Compare that to 40 per cent as of 2011. However, the figures are still skewed within science fields, as women accounted for over 50 per cent of Life Science PhDs, but only around 20 per cent of Computer Science PhDs. You can read the full report at: <http://digit.in/AmendmentIX>

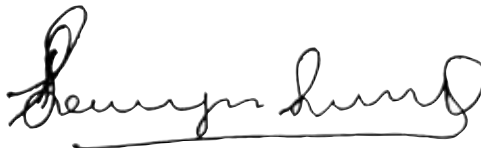
What this tells us here in India is that we certainly need to push for gender equality as the US did. That country has had the lion's share of technology innovations in the past 40 years, and something tells me this encouragement of women and breaking down of stereotypes, even forcibly when needed, actually does wonders in the long run.

Initially, I'm sure it will seem almost anti-male to a few, just as it did to the people in 1972 America (and perhaps still does to a few today as well). However, anyone who's ever pushed a stalled car knows, it takes a significantly stronger push initially to overcome inertia, and then the force applied can be gradually reduced once the car's moving.

What can YOU do? Stop stereotyping, read our cover story, don't be surprised that a woman can code, don't treat them as inferior, and actively encourage the women in your family and friends circle to try and achieve anything they want to, regardless of whether it's in a male bastion or not.

If you're a woman, encourage more women to get interested in technology in more ways than just by using it – encourage them to understand how it works. And most importantly, never use your gender as weakness or an excuse.

Personally, I think technology is missing a woman's touch. And no, I don't mean just colouring things pink. What do you think? 



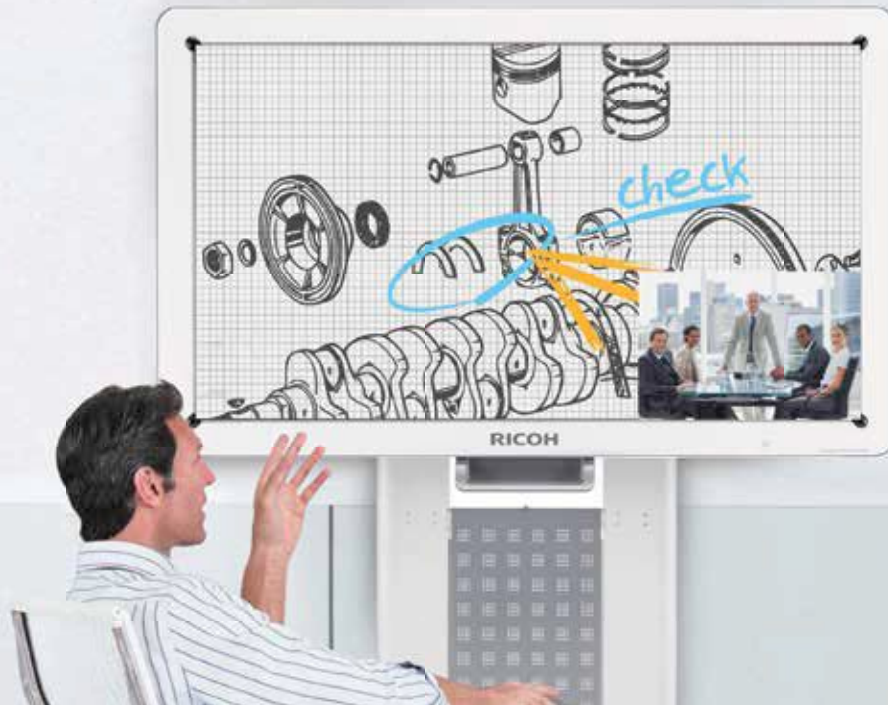

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Executive Editor  
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**"Anyone who's ever pushed a stalled car knows, it takes a significantly stronger push initially to overcome inertia, and then the force applied can be gradually reduced once the car's moving"**

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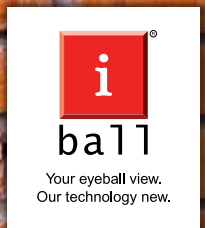


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**Google, No.1!**

Google still continues to be the dominant and hold its position in search engine market. Read more: <http://dgit.in/no1ggle>

✉ I've been reading Digit on and off ever since it started... I'm pretty sure I could find the very first copy lying around if I really looked for it :)

I got the latest issue at Delhi airport. The content, as usual, ranges from good to spectacular. But the packaging? It's terrible. First of all, there's so much plastic. Then all those tapes. I tore off three of the magazine's covers trying to get them off. It took me the entire walk from the book shop to gate 43, a good 10 minutes, to just untangle the mess! Digit is a technology magazine, why not use some better greener technology for its packaging? All the best!

– Khursbed Batliwala

4 That would be nice. If you ever get the time, find that first issue and send us a picture :)

Yes, I've been trying my level best to figure this out, for the past 12 years actually, and failing. I say chuck it all, let's start a digital version for phones and tablets and end the whole mess once and for all. What say?

– Robert

✉ I've been a reader of your magazine since 2006 and this is my first time writing to you from a small town in the Eastern-most part of our country. To be honest, I'm not a regular reader since I can't afford to be one. I try to grab at least the anniversary issue of Digit. This year, I couldn't find the issue at my book stall, so I bought it online.

I went through the magazine and found it to be the ultimate IT buying guide for students, professionals and IT lovers. Since I have a dream of starting an IT hub, I find this magazine perfect for that. I will refer it to everyone interested in technology magazines. No other magazine can beat Digit in this category. Well done, Team Digit. Keep it up.

– Kaushik Phatowali

4 Thank you Kaushik, your support really means a lot to us. You should get a subscription – it works out cheaper and you get your regular dose of tech without worrying about it at your doorstep! And yes, please encourage more

### Feedback for the August 2015 issue of Digit



people to read Digit, even if it means donating or lending your old copies to more people. We need to educate India about technology.

– Robert

✉ I'm a Class XII student and one of your many readers. The new 'dmystify' - "The Small Book Of Big Thoughts" is really awesome. The first book in the series explained the famous equation of physics:  $E=MC^2$ . My concepts about it really got cleared to a very large extent (Thanks to the simple language and explanations).

But the problem lies with the video links provided at the end of the book, which don't work. Whenever I enter the URL provided, I get the following error: ERROR 404: PAGE NOT FOUND

I'd be really grateful if you could provide me with the correct links to all the videos.

dmystify is a really good book. Keep up the good work.

Alfarhan Zabedi

4 I think you're typing the links as either: <http://www.dgit.in/> (Don't add the www) or <http://digit.in/> (It's dgit, NOT digit). The correct form is: <http://dgit.in/> Ensure you type the link exactly as printed.

That said, two of the YouTube links we gave went dead since we published the book, that's why we also included the exact names of the documentaries so that you could search for them easily in case this happened.

The new links for those two are now: <http://dgit.in/1NPNGcV> and <http://dgit.in/1Lw8r02>

– Robert

✉ I was thrilled to see Django in this month's edition. The book is worth every penny. Thank you for the great effort in making that book.

– Anand Reddy Pandikunta

4 Thanks for your feedback, we appreciate everyone who takes the time to write to us.

– Siddharth

✉ Hey guys! I'm 15-years old and a big fan of your magazine. It's really cool and I quite like your in-depth analysis of every subject that you write about. I'm interested in technology and writing. My English is pretty decent too. I wanted to write for you guys occasionally. Thank you and keep up the good work!

– Dhruv Ahuja



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## Un-detectable Cycle

WordPress Sites used to redirect users to malware affected websites. Read here more: <http://dgit.in/wordpsmlware>



## Let's Kickstart!

If you just want to Kickstart something, but just cant figure out what? Take this quiz to know it: <http://dgit.in/ksstrtanythng>

### LETTER OF THE MONTH

✉ I'm a retired Govt. employee of West Bengal, now living in a village and reading Digit since September 2001. This is with regard to Siddharth's editorial 'Bottoms up'.

National e-governance plan is an initiative of the GOI to make all government services available via electronic means. However, who will provide these services? In most district offices of both the State and the Central governments, about half the sanctioned posts are vacant, and a large percentage of existing employees are old, and reluctant to learn computer-based tech. Most of the district heads are also ignorant after their short course of training. As a result, government services are unsatisfactory. The government can name all the schemes and projects it wants, but successful implementation is never done due to a lack of proper vigilance.

You stated that e-governance is much needed to curb corruption, fraud etc. The PAHAL scheme was introduced to stop corruption in the domestic gas supply system and to save money in the form of subsidy. Let's look at an example to see why corruption will continue: Two persons, namely A and B, are using LPG under the PAHAL scheme. A requires 9 cylinders per year and B requires 6. Both live in a rural area. I was astonished to learn that their gas cylinders are being booked during the unbooked months by the dealer/distributor and gas

cylinders are sold in the open market for personal profit. Subsidies for these cylinders are also being transferred to the Bank account of A & B. Thus, the government loses money for  $3 + 6 = 9$  cylinders @ ₹208.18 for each = ₹1,873.62 per year due to the hacking of PAHAL accounts by the dealer/distributor. That can be averaged to ₹900 per person per year!



The new government relaunched the Kisan Vikas Patra (KVP) scheme, but the certificates aren't available in rural post offices. I got one in March 2015, then another in May 2015, and since then no more certificates have been available. I wrote emails to the Chief Post Master General W.B. and the Secretary, Department of Posts, GOI, but got no acknowledgement, let alone a reply.

You've rightly said that technology is the only thing that can change this. Very few students in rural areas know computers, and this is what needs to change. We need to make computer science compulsory in the syllabus. E-learning would also help. The common student has to spend a lot for private tuitions, despite the big budget by the government for education.

I should mention some positives as well: The Directorate of Public Grievances ([dpg.gov.in](http://dpg.gov.in)) is doing a good job. Anyone can file a complaint against any department on its site. One kilometer of concrete road is being paved in every village, the MGNREGA schemes are being successfully implemented, I can

withdraw pension from an ATM in a remote village, purchase railway and air tickets from home, pay my telephone and electric bill and send money via net banking, and electricity and water are being supplied to each village.

– Tapas Jana

📌 Siddharth will respond to you personally later, as he's travelling currently. For the time being, you have me. You're right, life in India cannot be called fair, not for a vast majority of people. However, although systems have been discouraging thus far, we believe technology really will change all of this.

We're still playing catch up, and not just with first world countries, but also some developing countries in some fields. Social networking means that politicians can no longer get away with mediocrity, and it also means that services of not just private entities, but also public and government entities are open to both, ridicule and praise. We can now see what's happening around the globe thanks to services such as YouTube, or talks such as TED. It's called "Information Technology" for a reason... it allows more and more people to be informed.

Yes, you'll have various politicians jumping up and down claiming this as their doing, but the truth is, it's inevitable. The best a politician can do is to not stand in the way of this progress. Besides, it's our tax money that they "allocate" anyway, so really, it's the people of India and technology that will improve it, slowly, but surely, and nothing can stop that change!

– Robert

📌 Well, there are a couple of things you could do:

1. Since you're interested in gaming you could send in writeups for SKOAR!
2. You could join our writers programme.
3. You could also send in features for our Community pages, which have been showcasing reader contributions for quite a while now.

– Siddharth

✉ Just noticed. The femtometre scale numbers are messed up. The -15 appears as normal text (10-15) instead of a superscript (10<sup>-15</sup>). Had me confused for a second.

Cheers.

– Tanuj Baru

📌 Yes, that was my mistake, sorry. I wrote it in Google Docs, and forgot to

check if the numbers had been displayed properly in our layout software, InDesign. We noticed it just after the printing started, sadly. We've uploaded the corrected PDF to give away for free to everyone, and also included it in the DVD this month. Go to <http://dgit.in/dmystify0715> to download the PDF. Again, my sincere apologies to all our readers.

– Robert



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### GREED

For those who just want more than should be humanly allowed, we have enough to satisfy your hunger...

**THIS MONTH:** Mammoth Ivory D20s, U-Boat Worx Super Yacht 3, RAL 9000, Vertu Aster, Lamborghini Veneno Roadster and more...

### TEMPTATION

If you're wondering what to do with yourself or how to spend some time getting cultured, this section is for you...

**THIS MONTH:** Mr. Robot, Mission Impossible: Rogue Nation, Westworld, The Man in the High Castle, Sneaky Pete and more...

### DESIRE

## Alienware 18 (2015)

The love child of a gaming desktop and laptop



### MicFlip Cable

There aren't many USB Type-C compatible devices around and such devices won't be going mainstream anytime soon. So, you'll have to stick to the regular micro-USB cables for now. But what if you could have reversible micro-USB cables right now? USB Type-C is said to drive away the pain of misjudging the orientation of the plug while attaching the cables your USB powered devices. The MicFlip Reversible Cable is here to prevent that with the magic of reversibility.

Gaming laptops aren't able to match the performance of gaming desktops. But looking at the current and upcoming ones, the gap is being closed. Dell has launched the latest version of the mighty Alienware 18. The latest iteration is available in custom variants, which provides the freedom to choose a desired configuration down to the processor, memory, storage and GPU. It includes a dual-GPU setup and still manages to provide an efficient cooling system. The new Alienware 18 borrows the same design cues from the previous models, while packing all that serious hardware in the aluminium and magnesium chassis. You also get an infinite number of lighting options with the RGB LEDs



scattered all around, which can be controlled by the AlienFX software. The matte rubberised finish makes the laptop feel premium. As mentioned earlier, you can choose your own configuration, with the highest one costing around \$4,650.

### SPECIFICATIONS

**Processor:** 4th Generation Intel Core i7-4790K | **Display:** 18.4-inch (1920x1080) | **Graphics:** Dual NVIDIA GeForce GTX 980M (4GB GDDR5) | **Memory:** 32GB (1600MHz) | **Storage:** 512GB mSATA + 1TB 7200RPM SATA

### Mi Nano Router

The Mi Wi-Fi nano is a tiny router that's priced quite competitively. The router can be plugged into a Mi Power Bank (or rather any power bank), and it's claimed to offer up to 30 hours of usage on the 10,000 mAh variant. Not bad at all.

### Steam Link

Playing your Steam games anywhere in the comfort of your house in front of your TV sounds amusing. The device gives access to your Steam library through the home network. It basically lets you use your PC to play games on your TV.

### Google OnHub

The Google OnHub is not just a WiFi router, but it's also compatible with numerous protocols for Internet of Things (IoT) devices. It runs on Brillo which is an Android forked OS and can be controlled through the Google On app.

### Sideclick

Snapping Sideclick to the remote of your media streamer will let you control your TV, sound and streaming device – all from one single remote. Sideclick currently supports Roku, Nexus, Apple TV and Amazon Fire TV.





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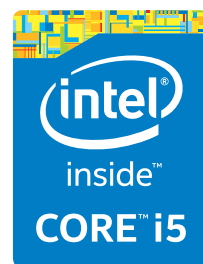
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## Xbox One Limited Edition Halo 5: Guardians Bundle

This custom Xbox One has been designed to mirror all the details and aspects of the Spartans, with the body of the console overlaid with textures. Both the console and the controller have been given the Spartan blue treatment and the familiar hexagonal pattern characteristic of the Halo universe. The bundle also has an alternate controller inspired by the Master Chief's green body armour and golden visor. This limited edition Xbox One comes with 1TB of storage, Halo 5: Guardians full game (obviously) and a few exclusive DLCs. The Xbox One Limited Edition Halo 5: Guardians Bundle releases on October 20, before the official launch of the game on October 27.

## Asus ZenPad S 8.0

There's no sight of the proverbial light at the end of the tunnel for Tablets as sales plummet further. Yet Asus brought their new ZenPad S 8.0 tablet to the fray. Most tablets in the market try to compete with the iPad and the iPad Mini, and the ZenPad S 8.0 is another one of those. Asus is known to manufacture quality tablets including the Nexus 7. Their latest offering displays a slight design refresh by incorporating some aluminium and leather. The tablet runs on the Intel Atom Z3580 processor backed by 4GB of RAM and 64GB of storage. It also adds support for storage expansion through a microSD card slot. The tablet bears a 7.9-inch display with a resolution of 2048x1536, promising up to 8 hours of battery life.



## Kindle Sleeve



If reading is as important as breathing for you, you might have already bought yourself a Kindle. The device has many aftermarket covers and cases, but none of them are made from eco-friendly materials. Coming from a company called Clean Planet, the Kindle Sleeve is a neat looking denim sleeve. It's claimed to be made from wholesome natural fibres and also sports a pocket at the front to accommodate any additional accessory to go with your Kindle.

## SECURITY WATCH

### Android devices still vulnerable after Stagefright patch



Remember the Stagefright vulnerability on Android smartphones that made news a few weeks back? It left your phone open to hacks by just a simple text message. This vulnerability had the potential to attack nearly 95% of all the Android devices running the versions 2.2 to 5.1. Even though Google had released an official patch, users are still vulnerable to the same attack. The patch was distributed to Android users through over-the-air updates and apparently the patch turned out to be buggy. Google has acknowledged the second vulnerability and has sent out updates to OEMs, so your fix might be dropping in soon.

### Ransomware attacks will extend to wearable and IoT devices



Ransomware might just be among the most dangerous type of hacks, if the data hijacked is really important and private. And wearables and IoT devices – are the new targets. Security researchers at Symantec displayed how an Android Wear device can be exploited using a simple Android ransomware. Though the demonstration only involved rendering the data on the wearable device to be unusable, attacks in the future could involve hijacking private data and holding it to ransom. The attack involved the installation of an apk manually which can also be pushed through malware, so if you own a wearable device, make sure you don't tread near malware.

### Internet Explorer's flaw gave hackers access to your PC



If you're an enthusiastic Internet Explorer user, then you should know that you were open to hackers who could gain access to your system. Microsoft has patched up this vulnerability, so you don't need to worry the next time you use IE. The flaw was discovered by Google researcher Clement Lecigne, the exploit being triggered by clicking on an URL sent over by email or through IMs. This exploit would then allow the hacker to gain the same privileges you have over your system. So if you're handling a server or a workstation, you could have been subjected to remote attacks, compromising the entire internal network. The patch has been released in the form of a regular software update to all the versions of IE (7, 8, 9, 10 and 11). Make sure you update your IE to the latest version, so you can enjoy browsing the Internet on IE.



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## Speedo Shine

There are wearables in almost every use-case you can imagine, even for times you are the most happy. Fitness trackers are usually used to count your steps, heart rate, sleeping habits and now Misfit has teamed up with Speedo to come up with a new wearable to track your swimming habits and workout. The Speedo Shine from Misfit keeps a track of your laps powered by lap-counting algorithms, a feature that isn't available in the market currently. The tracker bears an aluminium body, is waterproof (obviously) and comes with an integrated app on Android and BlackBerry that will track your laps and distance. The device also keeps track of other parameters such as sleep patterns. It runs on a coin cell battery that runs for up to six months.



## Razer RealSense

You might have heard about Intel's RealSense technology being used in different 3D sensing applications. Now, Razer has announced a RealSense enabled camera for PC gaming. The new peripheral is a really compact and cylindrical camera that fits right in your pocket or the palm of your hand. Speculating about its applications to gaming, the camera might be used to track your head movements while you play games to invoke actions on the game you're playing, say a flight sim game where the view inside the cockpit changes according to your head movements. The device will also give gamers enhanced game broadcasting and VR gaming capabilities. The camera holds another amazing feature which allows videogame broadcasters to do away with green screens in the background and stream with just the camera, which essentially removes any type of background and focuses only on the gamer. Details about the device are yet to be released.



## Strontium OTG USB 3.0



There are many smartphones and tablets that don't support expandable storage, so you're left to settle with deleting older content. This can be quick painful at times, and hence a good reason to consider buying an OTG enabled flash drive. Strontium's OTG USB 3.0 flash drives come

in 16GB, 32GB and 64GB. The drives have very high transfer rates for lag-free video playback. USB 3.0 ensures lightning fast transfer rates as well.

## WEB WATCH

### RecordSetter



There are really fascinating world records out there, with some of them being as inane as a record for the highest number of pancake flips. RecordSetter tries to create and display records from

all over the world, inspiring everyone to set new records and break existing ones. You can explore through hundreds or maybe even thousands of world records, some that are as lame as "Tallest Shaving Cream Wig Built In One Minute". <https://recordsetter.com>

### Stamen Maps



Stamen offers you many ways to display the map of any location on earth in different settings, other than the regular terrain and road mode. You can switch between

modes like Watercolor, Toner, Terrain, Burning Map, Tree, Crabs and Crime. It also has a map for Mars. It has the ability to crop out images of desired locations and also embed required locations on your website.

<http://maps.stamen.com/>

### Birthday Pizza



You obviously know your age on Earth, but have you wondered what your age would be on the other planets in the Solar System? This website, will tell you your age on the different planets and certain moons, after you enter your birthday. Also, you will be able to check whether you have your birthday coming up on any of the planets and moons covered on the website.

<http://birthday.pizza/>



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# Canon MH20F-SH

## Pitch black photography

We could really use cameras that could see in the dark. Not those infra-red cameras that just output images in monochrome, spoilt with a high level of grain. Canon has unveiled a camera that not only takes colour images in the dark but also shoots videos. The Canon MH20F-SH has a full frame sensor with just a tiny 2.26 megapixel resolution. If you're wondering what one can achieve with such a puny little figure of megapixels, then you should know that these megapixels are 7.5 times greater than the regular ones in commercial cameras. The camera has a fascinating maximum ISO level of 4,000,000 and camera users will know that bumping up the ISO level means grain.

The Canon MH20F-SH won't be seeing any regular consumer application, considering the price tag of a whopping \$30,000. In the professional and expert area, this camera would do wonders in the field of wildlife photography. Astronomy lovers can potentially benefit from the light-gathering capability of this camera to provide highly detailed images of the stars and other celestial bodies.



## Trekz Titanium

Coming across someone who doesn't enjoy listening to music is unlikely. Sometimes, it can be a drag if you don't have some music playing in the background, especially during mundane activities that demand caution. Bone-conducting headphones have been present in the market for quite some time. These work by conducting sound through your cheekbones and straight into your inner ear. When you're cycling down the road and want to catch up on your favourite song but need to be equally alert on the road, Trekz Titanium is the perfect solution.

The wireless bone-conducting headphones feature IP55 certified dust/sweat resistance and up to six hours of playback time. The headphones have a premium titanium frame, making it strong and durable while also maintaining flexibility. These headphones will also allow you to receive phone calls. Being a bone-conducting headphone, leakage is inevitable but their PremiumPitch+ technology claims to solve this problem.



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## Nebia Shower

The majority will agree that taking a warm shower is quite relaxing and something you would want to invest in. Nebia Shower want to be your replacement shower head, claiming to save up to 70% of water compared to the usage of regular households while spoiling you with a royal shower. Nebia uses a unique nozzle on their showerhead, tinkered and optimised by aerospace engineers, assuring us on how serious they are about showering. The shower is easy to install and easy to adjust, and also comes along with a portable handheld showerhead.



## AQUA

Portable amplifiers were summoned so that you could enjoy high-quality music while travelling but they were limited by their battery life. Such amps still aren't ideal to be stuffed in your pockets (expect a few) and definitely not acceptable if you're a fitness freak. AQUA is a small audio amplifier, packing a DAC chip inside and surprisingly not being powered by a battery.



It seems deceptively interesting since you do need power to be driven to the amplifier to enhance the audio. The AQUA sports a monolithic classy design and is supported for both Android and iOS devices.



## Maguss Wand

Potterheads unite! If you've always facied becoming a wizard or a witch, swishing and flicking your wands, someone has managed to duplicate that in our boring Muggle world. The Maguss Wand connects to your smartphone and emulate a fantasy game as you battle it out with your wands against your friends, casting spells and scoring points. Three game modes make up the virtual battle arena where you can either play against your friends or find someone online. On the mobile app, you can try out all the different spells before you challenge someone to a duel.



## Exploride

Using your phone while driving is quite risky if you use maps, receive or make calls. Depending solely on audio input/output can't have the best of experiences, considering the scenario where you are navigating on a map or checking the notifications on your phone. Exploride is a transparent HUD-display, capable of being placed right on top of your dashboard in front of you which can be controlled hands-free. Even though having your notifications and map pop up on your windshield is the future, this is the first step.



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DESIRE

# MOBILE WATCH

*We come across smartphones with crazy levels of security while another with crazy specs. The other one is a leaked device.*



## BlackBerry 'Venice' slider

Amidst the barrage of rumours floating around BlackBerry building an Android powered smartphone, several images and videos confirming the news have been leaked out thanks to Evan Blass (@evleaks). Nobody's really sure about the device specifications but the leaked images show a sliding physical keyboard and the Android interface. Also leaked are videos showing the sliding keyboard mechanism and also two of the rumoured devices, prompting speculations that the phone might come in two variants running Android and BlackBerry 10.

## Blackphone 2

Although privacy is a concern for everyone connected to Internet, investing on highly secure devices isn't really affordable. There are certain people out there who are really paranoid about their privacy on the interwebs. They prefer to be off the grid but still want to stay online. The Blackphone 2, an upgrade to the previous Blackphone, is a privacy-focused device from Silent Circle, running a secure fork of Android called Silent OS. The phone is loaded up with a plethora of privacy tools and apps including encrypted messaging and voice calls. It has a 5.5-inch 1080p Gorilla Glass display, powered by an 1.7GHz Octa-core processor with 3GB of RAM and 32GB of storage. The phone sports a 13MP camera at the back and supports microSD card expansion. The Blackphone 2 is directed towards personnel working in private enterprises where data integrity and security is absolutely essential. The phone was initially revealed at the Mobile World Congress and is now up for pre-orders on the official website. It's expected to be released around September.



## Saygus V Squared

Pitched as a highly disruptive smartphone, the Saygus V Squared offers specs you not seen in regular smartphones. However, that isn't the case considering how smartphones with better specs at lower prices have already arrived. The specs aren't exactly disruptive, with a Snapdragon 801 processor running on 3GB RAM with 64GB of storage. The 21MP rear camera can record videos in 4K. The rear as well as the 13MP front camera come with OIS. Furthermore, two microSD card slots can add a total storage of 464GB (200GB + 200GB + 64GB). The V Squared is priced at \$650.

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# Mammoth Ivory D20s

Anyone up for a game of Snakes and Ladders?

Playing board games is fun and whether you win or lose is totally dependent on the numbers you score on the dice. Usually, most of the dice are made out of plastic or wood, and rarely will you come across ones made from precious stones or crystals. But these materials are too boring and we want dice made from woolly mammoth ivory. The large tusked beasts went extinct about 10,000 years ago and after coming across their fossils, someone thought of creating die out of their tusks. Initially, only 2 dozen of these die were created, as they received a lot of attention and sold out in just 24 hours. Now they have begun taking pre-orders once again, so you should probably book yourself a piece right away. A single mammoth ivory die costs around \$248 and comes packed inside its own box made out of Eastern Aromatic Cedar, while the insides are created from Black Walnut.

These Mammoth Ivory dice will last a very long time, considering the fact that they have gone through aeons of getting all the cracks filled up. The makers boast that the dice will last for another 10,000 years. According to the creators, mammoth ivory exhibits a high level of lustre but sends off a highly pungent odour, which



is inevitable if you're cutting open a 10,000 year old relic. The dice you receive won't have that peculiar odour thanks to some elaborate chemical process. However, it will definitely display all the craftsmanship and hard work that's gone into it.

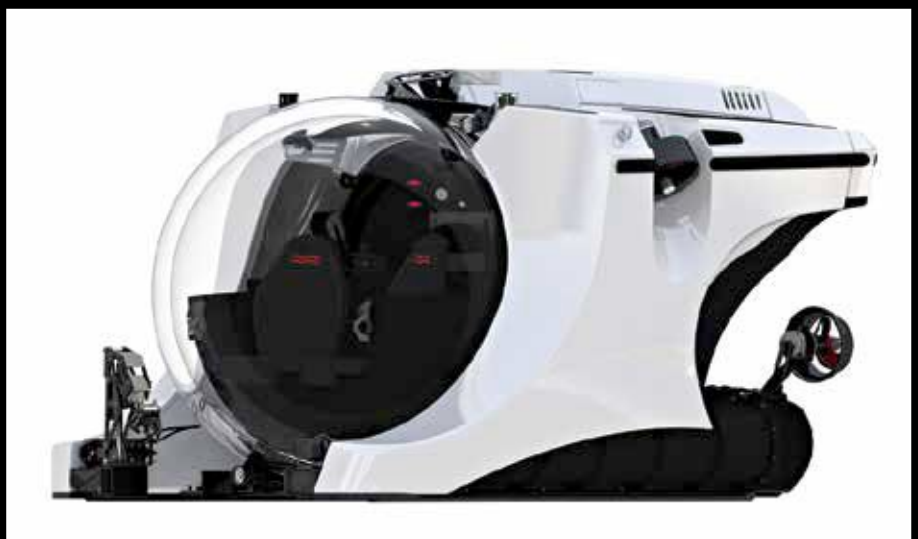
Your search for owning the most exotic materials on the planet begins here. Creating these dice isn't easy since you don't just trip over a mammoth tusk everyday. We don't know about you, but a die made out of an extinct animal's carcass is something we would like to put up on our shelves. Other variants are available as well, but we have our eyes set on this piece of art.

# U-Boat Worx Super Yacht Sub 3

Let's look for the Titanic

It's quite boring to travel and visit places on land but that won't be the case if you had your own submarine. This could be just the vehicle for you if you love to spend time underwater, marveling at the life that exists at the seabed. The small and light Super Yacht 3 can carry up to 3 people to a depth of 300 metres. A great addition to any super yacht, this submarine has a flexible lifting arrangement and is easily adaptable to any crane configuration. You will be able to enjoy 12 hours of a nonstop journey under the ocean in the submarine thanks to the 42 kWh battery system. The Super Yacht 3 will cost around \$2 million.

The Super Yacht is apparently the first submersible that can be upgraded in terms of its depth capability. Starting off at a depth of 100m, owners can later upgrade the depth-rating to 200m or even 300m. The submersible is capable of handling the huge amount of pressure even at the depths of 300m. The acrylic viewport will give all three occupants the best view underwater. Buyers will also be able to fully customise



the interiors of the Super Yacht 3, enjoy music on the sound system and even store their favourite drinks in a cold storage box. The on-board life support systems can be extended up to 96 hours and includes 3 autonomous breathing devices.

When the pilot is idle for a long time, indicating that she's possibly passed out, the submersible will automatically rise to the

surface without any human intervention, as a safeguard. If you surface at a location you don't recognise, you can release the safety buoy which will mark your exact location, thereby making it easy for rescue personnel to track you down. Furthermore, the Super Yacht 3 ensures that there's no possibility for entanglement by protruding objects, thus lowering accident risk.



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## MediaTek Wearable/IOT Solution



## RAL 9000

What looks like an enhanced and futuristic version of Pixar's mascot, Luxor Jr., the RAL 9000 isn't just something you come across every day. The creepy but elegant lamp comes from a Japanese company called Anodos and is almost begging for a tiny space on your desk to call home. The lamp has an LED display along with six cameras and sensors that enable it to position itself on the surface. The lamp achieves this feat with the help of motorised arms. As seen in their product video, the lamp is apparently capable of shutting down once you move out of its vicinity, showcasing the sensors at work. There is no information on the pricing or release date of the device but by looking at the sleek and highly functional lamp, you might have already estimated how expensive it might be.

## Vertu Aster

There are many luxury smartphone brands that have crazy prices but offer really low-end specs. The Vertu Aster not only sports a beautifully crafted body but it also manages to offer specs that you won't usually find in this exorbitant range. It has a 4.7-inch 1080p display, running on a Snapdragon 801 processor with a 13MP rear camera, 2.1MP front camera and 64GB internal storage. The build quality of the handmade phone is as good as it gets. It sports a ruby key on the side, leather at the back, with titanium side rails and sound bar. The screen is made out of sapphire crystal, offering a virtually scratch-proof surface. You can personalise your own Aster with a wide range of colours for the leather-clad back, personalised message and design. Owners of Vertu will have access to special services such as a private member's club and security services, setting you apart from the plebes. The Aster costs around Rs. 4,75,000.



## APP WATCH

### Smartspends



Tracking the money you spend every month isn't really easy. Although there are many apps that try to solve this problem of managing your monthly spending, you end up not using them since you have to manually enter your expenses. Smartspends tries something different by pulling the amount from your SMS messages that you receive during transactions, followed by asking you to enter where you spent that money. You can add monthly spends of Lunch, Dinner, Fuel or Local Transport and also get reminders for Bills, but the app needs SMS messages to fetch data about your transactions. Along with the above, the app also lists out offers from the different establishments where you made the payments.

**Play Store:** <http://dgit.in/Smartspends>

### Cityscape



Pitched as a local social network, Cityscape aims to build a community of users for local news. The app presents you with a personalised news feed, curated on the basis of your preferences. For now, the app seems more like a news aggregator due to the absence of posts from users. As more users join we can actually have a portal where information is exchanged about local events, robberies or accidents. There's also a feature that lets you browse through the local feed of news/information in the metropolitan cities. The app looks ambitious and can only scale as users pour in and start actually sharing local information, otherwise it would just be stranded as a local news feed app.

**Play Store:** <http://dgit.in/CityscapeAnd>

### SignEasy



Authenticity of a document is essential when it comes to NDAs, confidential reports, financial statements and contracts. Usually, the exchange of such critical documents is accomplished through scanned documents but doing the same using just an app would be godsend. Although there have been other players, signing documents is a breeze with SignEasy. Attachments from email can be imported directly to the app where you can use your fingers or a stylus to sign documents. The app also lets you store these signed documents directly to your connected cloud services such as Dropbox.

**App Store:** <http://dgit.in/SignEasyApp>

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## Harley Davidson Cosmic Starship

Becoming a billionaire probably hasn't dampened your love for riding motorcycles, and you are one of the few ready to leave the comfort of a chauffer driven car for an exotic two wheeler. There are plenty of exclusive custom-designed bikes, some of which are auctioned for millions of dollars. The Cosmic Starship is a custom bike built by Harley Davidson in collaboration with artist Jack Armstrong. It's easily the rarest of the rare amongst custom bikes, with only one in existence. This brightly coloured exotic bike was sold for approximately a million dollars. If you want to own this extremely rare bike, you might have to reach really deep into your pockets.



## Lamborghini Veneno Roadster

Capable of accelerating from 0 to 100 kmph in just 2.9 seconds, the Lamborghini Veneno Roadster can reach top speeds of up to 355 kmph. The supercar achieves this with a twelve-cylinder engine with a displacement of 6.5 litres mated to an extremely fast-shifting ISR transmission. The body is reinforced with carbon fibre, with Aluminium front and rear frames, which gives it incredible weight reduction, while also providing structural rigidity. The interior of the Roadster also receives the carbon fibre treatment, with naked carbon fibre panels showcasing the tell-tale weave. The seats are extremely lightweight and made from Lamborghini's patented Forged Composite. Priced at \$5.6 million, the Veneno Roadster is the most expensive car ever built by Lamborghini.

The Veneno Roadster looks just like the regular Veneno but without the roof. The roofless design nevertheless maintains the aerodynamic slipperiness of the hardtop version while also preserving chassis rigidity thanks to its carbon fibre composition. The Veneno Roadster has a dry weight of just 1,490 kg, which gives it phenomenal power-to-weight ratio. Owning the Veneno Roadster isn't easy even for the ultra rich, since there are only seven of these built.



## AgustaWestland AW101

Nothing beats the AgustaWestland AW101 for the ultimate in safety and comfort. It offers high levels of reliability, with measures for post-crash survival. The AW101 flies on three powerful GE CT7-8E turboshaft engines with full Authority Digital Engine Control (FADEC) that provides an excellent performance and One Engine Inoperative (OEI) capability. The cabin inside provides a stand-up headroom of 1.83m and a width of 2.49m gives you enough wide space to personalise your seats and furnishings. The AW101 will cost you around \$19 million.



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## Admiral X Force 145

What is the point of being a billionaire if you don't own a mega-yacht? And to own this one, being a billionaire isn't enough, you have to be a multi-billionaire. A steel hull, crystal chandeliers and solid marble floors are among the few features of this uber luxury mega-yacht. Billionaires own a private helicopter and the X Force 145 has you covered with

not just one but two helipads. That's also a great excuse to buy another helicopter. You also get two pools, two movie theatres, a garage for your most favourite supercar and a bi-level pool area. The 145 m long mega-yacht has reserved to reveal the price only on request, but it's speculated that the X Force 145 might cost as high as \$1 billion.



## Airbus A380

The Airbus 380 is the biggest passenger aircraft ever built. So big, that the airports have to upgrade their facilities to accommodate it. The A380 is a double decker, wide-body jetliner that's powered by four-engines. The plane is capable of carrying 853 passengers (538 on the main deck and 315 on the upper deck). If you have the money to burn, the A380 can be purchased as a personal jet as well. The luxury plane will cost you around \$300-350 million. That's the price of an unfurnished one, mind you. Amenities such as bathrooms, showers, lounges and movie theatres can be incorporated if you can't figure out what to do with the few million you have lying around. Saudi Arabian royal Prince Al-Waleed bin Talal was reported to have spent around \$450 to 500 million for his own private A380 that apparently housed car parks and Turkish baths. Surprisingly, the same plane was sold off to an unnamed billionaire.





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MOVIE

# Mission Impossible: Rogue Nation

Another impossible mission, another mission impossible movie

**T**he IMF (Impossible Mission Force) has been torn down and its members have been absorbed by the CIA. Ethan Hunt has gone rogue, denying to cooperate with the change in order and vowing to find out more about the Syndicate, the anti-IMF.

Just like every other Mission Impossible movie, it gets better than the previous one, following the same old trope of achieving the impossible. Tom Cruise shows off that even at the age of 52, he can be as badass as one can get, as he flings himself on an airplane at 5,000 ft up in the air. Simon Pegg ensures the movie doesn't get too serious, poking fun with light and clever humour. The story includes an unpredictable and interesting plot. But after you finish watching



the movie, Rebecca Ferguson will have taken over your mind.

The movie sees the faces of the Syndicate members, who were deceptively mentioned in Ghost Protocol. The Syndicate is a team of highly skilled dismembered agents from around the world. Their mission is to bring tension and conflict between nations, through a series of terrorist attacks, aiming for a dystopian new world order.

Rogue Nation has everything that you would expect in a spy movie, especially an MI movie. Contrary to the previous movies, this one seemed quite methodical in building the plot and make you anticipate the fate of certain characters.

A must watch if you're a fan of the franchise, as they deliver their best one and also if you like what Tom Cruise does the best, action.

- Abhijit Dey

TV SHOW

# Mr. Robot

"What I wouldn't give to be normal. To live in that bubble. Reality of the naive."

**T**he trailer of Mr. Robot was so intriguing, we were really looking forward to watch the season pilot. The story revolves around Elliot, a cyber-security engineer, who is also a vigilante hacker by night.

We were apprehensive about the depiction of the technicalities involved in hacking and hoped not to end up watching some animated mumbo-jumbo. And boy, were we amazed. Each and every aspect of the pilot was spot on. As we watched the rest of the season, it took more of a dramatic direction

but the inclusion of legit hack techniques, kept us glued until the end. The show tries to mess with your head, making you doubt your principles and opinion about society, politics and yourself, just like Fight Club. Mr. Robot understands that the only way to make Elliot join their cause would be to motivate him through personal tragedy to get back at Evil Corp.

The show is dark, but you wouldn't want to miss Mr. Robot, since this might be the show you were waiting all along.

- Abhijit Dey



## Westworld

Inspired from a film with the same name, this series comes from Jonathan Nolan, and J. J. Abrams serving as executive producer. With only a teaser out, the story revolves around the dawn of artificial consciousness.



## The Man in the High Castle

"Evil triumphs only when good men do nothing". The series is set in an alternate history of North America where the Axis Power has won World War II. It is based on the book with same name written by Philip K. Dick.



## Sneaky Pete

The series revolves around a con-man, fresh out of prison, taking over the identity of his cellmate, Pete. Moving in with Pete's family who hardly his face, he joins the family's bail bond business, as he takes down other criminals.

# Things To Do

## Pimp your Car

Cars come equipped with several accessories and technology. But there's always room for improvement, so here are a few cool gadgets and accessories you can install in your car, to achieve some serious bragging rights.



## Android Auto/Apple CarPlay

Android Auto and Apple CarPlay want to take over your car infotainment system, offering you a bunch of features to enhance your driving experience. Pioneer is the

first company to launch aftermarket Android Auto and Apple CarPlay solutions. The Pioneer AVIC-8100NEX is their flagship entertainment system which is compatible with Android Auto and Apple CarPlay, priced at around \$1,400.



## Head Up Display (HUD)

Whether it's accessing the navigation tools on your phone or receiving a call, you can't really risk losing your attention on the road. An HUD will essentially display an interface either on a console or over the windshield. The interface will

include all the necessary apps like maps, messages, phone logs, etc. Navdy is one such HUD solution that sits on your dashboard with a transparent console. Capable of voice recognition, the Navdy also detects gestures for certain actions like receiving a call. The Navdy HUD will cost you \$299.

## Scent Atomiser

All the tweaking in your car will be a complete waste if the interior doesn't smell good. There are options to place gels in your car but scent atomisers do wonders, complementing the luxurious leather on your seats. Mercedes-Benz was the first manufacturer to include an atomiser in their cars that cost up to \$350.

## Dash Cam

Dash cameras are usually used to monitor the traffic on the road ahead. They become a good addition to your car and a very useful aid while driving. The Nextbase Duo dash cam has a dual camera setup capable of recording videos from the front and rear of the vehicle. The dual camera records video simultaneously and the saved footage can be recovered by connecting it to any PC. Dash cams also serve a vital role when your vehicle is involved in an accident and you need to identify the culprit.



## Remote start/lock/unlock

Starting up your own remotely might sound something from a Bond movie, but you can switch on your engine using your smartphone. Along with starting your car remotely, you can also lock, unlock, locate and track your car using Viper's SmartStart. You need to install SmartStart in

your car, the SmartStart app on your phone, set up a SmartStart account and you're good to go. The app is available both on Android and iOS.

## USB Charger

Out of all the accessories mentioned above, the most important one has to be the USB charger. Having your phone connected to your infotainment system is surely going to drain out your battery and you will need juice for your phone sooner or later.

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**Digital Life**

Amongst the complicated tech around us, we tend to overlook the mundane.

**Windows Evolution**

Do you recollect how windows 1.0 used to look like? And the versions later? Check out the GIF and the mini website: <http://dgit.in/win1to10>

# Existing technologies India needs NOW!

Enough of all the dreaming of the future and fantastic ways in which technology can help our country... here are a few that already exist, all we need is implementation

Infancia Cardozo  
[readers\\_letters@digit.in](mailto:readers_letters@digit.in)

*"The future is already here — it's just not very evenly distributed", said Sci-Fi author, William Gibson in the 1990 documentary, 'Cyberpunk'.*

In the documentary, he discusses the inequality in access to technological developments based on wealth and location. Countries such as Germany, China and Finland have been playing host to such developments for some time now, while India seems to be trailing behind despite being the world's largest sourcing destination for information technology (IT), an industry that reportedly employs more than 10 million Indians. Let's look at tech taken for granted elsewhere that could really help India.

## 1 City-wide free Wi-Fi

A sure sign of a progressive nation is the ability to quickly and easily access the Internet, anywhere and everywhere. South Korea shows us the way here – reportedly the most wired country in the world. In Seoul, you can, as a visitor to the city, log on to their free Wi-Fi and get speeds of about 47 Mbps. When you're in a new city, you're usually using a mapping service to get around, and this can result in a lot of data being consumed – at pro-



Free Wi-Fi is present everywhere in Korea

hibitive costs if you're roaming. Although cities such as Bangalore and Patna already have free Wi-Fi, more of this is needed, and across the country. Currently, you're capped to about 50 MB per day or 15 minutes in the day, after which you're expected to pay. Obviously that should be improved.

Internet service provider Ozone Networks, currently India's largest public Wi-Fi provider, is one of the facilitators of this service and has over 6,500 hotspots located across the country, including at Haldiram's, McDonald's outlets and the Mumbai International Airport. However, beyond the first 30 minutes you need to buy a data pack costing ₹ 30 and upwards.

Earlier this year, the Narendra Modi government allocated a budget of ₹ 7,000 crore under its 'Digital India' initiative to create around 50,000 to 60,000 Wi-Fi hotspots in 2,500 cities across India in partnership with state-run telecom firm, BSNL. We can hardly wait.

## 2 Babelfish

Say you're backpacking in Europe. All you have to do is whip out your smartphone, key in an input or say a phrase and resources like 'Google Translate' and 'Speak and Translate' return the result to you in the target language either in text form or as an electronic voice.





## Stems, the new audio format

Native Instruments is working on a new open file format called 'Stems' useful for creative mixing and DJing. Read here <http://dgit.in/offstems>



## Minecraft Gameband

Bored of your usual bands? Check this new Minecraft Gameband Redstone here: <http://dgit.in/minecrafterable>

Feature

Similarly, electronic pocket translators let you conveniently translate innumerable number of languages, feature an in-built spell checker, grammar guide and audio to help accurately pronounce words. The biggest advantage of these devices and Google Translate is that they don't need an internet connection to function. Optical character recognition and translation software on mobiles devices instantly work together when you point your camera at foreign language text such as menus or signboards. India, however, is a different beast!

There's an Indian proverb that goes: "Every two miles the water doth change and every fourth, the dialect." Every 500 kilometers or so we have a new language, in whichever direction you go. It's not just completely different languages, there are also multiple dialects to each language, or a total of 1,653 dialects in the country. For travelers, and those looking to do business across the country, being able to flawlessly converse with locals is imperative – even a slight change in pronunciation can sometimes drastically alter the meaning of your sentence. Also, knowledge of the language breaks down barriers and helps learn about other cultures and communities better. Knowing or attempting to learn the local language shows respect towards the other's culture – always desirable.

Although we have dedicated software and web-based resources to translate to and from popular Indian languages, these are impractical for when you're on the go. What we need is a portable universal translator, which has long been a fixture of sci-fi, for the hundreds of purely Indian languages, or, well, the Babelfish.

## 3 Easier digital payments

Those of you who have travelled to Australia in the last few years will have seen people use Visa payWave. It's almost magical an experience when you first see it. If you're in line to pay at a grocery store, you'll see people walk up to the counter, goods are scanned super fast, and then someone waves their wallet in front of a scanner and walks out. It's even faster if you have just one item – you can hold it up to the cashier as you approach the till, the amount is already punched in and



NFC Payments

displayed as you pass the scanner, and in essence you just walk straight out of the door! No signing, no PINs, nothing!

Now in India, perhaps there are security risks that we'd want to protect against for such a system, but we certainly need to cut down on the amount of cold cash being circulated – to reduce corruption, for starters.

India is no stranger to this technology. Pre-paid NFC cards have been used for toll and transport in buses and the metro here for some time now. Recently, banks such as ICICI introduced credit and debit cards with the NFC feature incorporated in them. Axis and HDFC are expected to install around 50,000 and 20,000 PoS machines, respectively by the end of 2015. Earlier, the RBI has restricted the maximum amount per transaction to Rs

2,000 due to security concerns. This limit has now been lifted due to the inconvenience caused by the previously enforced rule, defeating the very purpose of the cards. Thankfully we're never far behind the world when it comes to banking, so we can hope for this to come in pretty soon.

## 4 Superfast trains

The fastest train in India is currently the Bhopal Shatabdi Express, whose peak speed is recorded as 150 km/h. The upcoming Gatimaan Express clocked a maximum speed of 160-plus km/h in its feasibility tests. The Japanese Shinkansen, however, AKA the "bullet train", travels at a speed of 320km/h. In April 2015, Japan's Maglev successfully completed its test run at 603 km/h. Maglev (magnetic levitation) trains



A high speed train in China





### Automatic video editor

Have a long video to edit? You can now let it happen automatically using Graava Camera. Check it out: <http://dgit.in/graavaeditcam>



### Back to Basics

Samsung launched a 3.9-inch dual screen flip phone with Snapdragon 808, 13MP camera. <http://dgit.in/smsgnflpphne>

float on a cushion of air which eliminates friction, and their streamlined shapes reduce wind resistance. Read more about them at <http://dgit.in/maglevtr>

Now imagine what this could do for India: A 632 km journey from Mumbai to Goa that currently takes around eight hours, could be cut short to just over an hour!

The major hurdle to this technology coming to India is people and animals straying on to rail tracks and getting hit. It's not like the railways has a big enough budget either. Last year's Railway Budget made a provision of only ₹ 100 crore to build a bullet train in India, whereas a Japan International Cooperation Agency (JICA) report submitted to the Railways Ministry estimates we'll need ₹ 170 crore per km to build the bullet train corridor itself. We think it's safe to assume that we're not going to be seeing any Maglev train anytime soon.

## 5 Bicycle culture

Take a trip to Vienna, Austria, and you will see a row of parked bicycles with a touchscreen kiosk near them. This isn't some sophisticated, anti-theft bike parking, it's a public service. Austria's Citybike service lets you pick up and drop off a bike at any of the 120 public rental terminals in Vienna. There's a one-time registration fee of EUR 1, which is waived for tourists. The first hour is free, after which a usage fee is charged as per the number of hours you've taken the bike for – which ranges from EUR 1 to EUR 4.

All you need to do is figure out where you want to go, and if you can cycle there in under an hour, you never need to pay, and you get exercise to boot!

If there's one thing we need in our larger cities in India it's bicycles. They help keep our cities clean by eliminating noise and air pollution, reduce traffic congestion and encourage exercise. However it's the poor man's mode of transport here, whereas it shouldn't be. If we can find a way from preventing them from being stolen, there's nothing better for our cities. What's more, we can encourage private players to offer this by offering them advertising space at the bike terminals, within the app that's used to register, etc. That's how they do it abroad.



Capital Bikeshare station outside Eastern Market Metro

We'll need better road safety and dedicated cycle lanes if we're serious about this, however. Spread the word, and maybe we can rouse up enough chatter to have this implemented here as well.

## 6 e-Governance

All of us know how much Governance in India needs to improve. We're not wasting space explaining the problems, instead, we're looking forward to the cure.

Take the Seoul metropolitan government's OPEN (Online Procedures ENhancement for civil application) system designed to provide citizens access to online civil applications. If a citizen detects irregularities in the process or outcomes, s/he can file a formal com-

plaint. Even developing countries such as South Africa (in 2000) used Geographic Information Systems (GIS) and GPS tools to track the spread of communicable diseases such as HIV/AIDS and tuberculosis in the country. It's India's turn now. The obstacles facing her amongst others are the deeply entrenched organisational routines and lack of knowledge and resources to streamline and automate processes.

The good news is that our government has promised to digitise India with an investment of ₹ 4.5 lakh crore for various projects to be executed under its 'Make in India' and 'Digital India' initiatives. Some of the projects to be unveiled by this initiative include Digital Locker (which will host all our important documents in the cloud), e-Sign, e-Hospital (all hospi-



Digital India initiative by Modi government



## Flir One GEN II

Flir One is the perfect upgraded camera attachment that you need for thermal imaging.  
<http://dgit.in/flironecam>



## Your Dog's New 'Buddy'

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Read more: <http://dgit.in/buddycollar>

Feature

tals will be connected to one another and you'll be able to book appointments and check lab reports), MyGov Mobile app (allowing citizens to participate in government policy making) and Swachh Bharat Mission app.

## 7 Smart cities

There's one thing in common between all developed countries – all of them use technology in some capacity to help their citizens realise their full potential. Specifically smart tech, which is the core of smart cities. Be it to enhance safety, protect resources or simply for convenience, India could learn a thing or two from the tech that enables these feats.

Take the example of Barcelona: This smart city monitors utilities such as water, energy and electricity, collects data remotely from these services with the help of sensor technology and analyses it

for development of applications to ensure better services. Inspired by the Internet of Everything concept, the Barcelona City Council collaborated with Cisco to create 800 wireless access points. These Wi-Fi routers were mounted on top of the lampposts lining the city and using sensors helped measure temperature, air quality, pedestrian traffic, open parking spaces, etc and send it to city employees for analysis.

That's not all, it pretty much has all we've spoken about before this. Think about living in a city where the elderly are provided with a panic button in case they get injured, have a heart attack, etc. Help comes automatically. They have a smart bus network to help people get to places faster, their gardeners are tech equipped as they need to monitor not just automated watering systems, but also choose what plant would thrive best in a certain spot based on the data they receive

from multiple sensors in the area that report the average sunlight, wind speeds, temperature and humidity! Then, there are the other smart systems, such as traffic lights, public bicycles, e-governance, m-schools (schools using mobiles to teach kids), multiple apps to help you navigate the city, free Wi-Fi, easy to find and pay for parking...the works!

We need a few smart cities. Many of us are residents of Mumbai, and by word do we want these things! That's not all, since there's no need to reinvent the wheel, essentially, and all of the technologies we've spoken of here already exist, most of these ideas are ripe for private players to take up. (Hint: Use them as start-up ideas).

Millions will thank you if you can successfully implement any of these ideas. Private companies, governments (state or central), we mean you! Here's hoping that India is able to achieve this and more in the next decade. Jai Hind! 🇮🇳

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### Good going Apple!

Is this Apple's plan to save its new phones from the #bendgate, yet again? Read more here: <http://dgit.in/nobndgte>

# SIMPLY BRILLIANT

Against the backdrop of leaps we've made in computers, smartphones, space exploration and the ilk, we often tend to overlook the way in which simple things around us turn into exemplary inventions with the infusion of technology. Here's to celebrating the mundane!

Ketsan C

[readers\\_letters@digit.in](mailto:readers_letters@digit.in)

Ever since we discovered fire and invented the wheel, innovation has never taken a break with humankind, whether it is war or peace. But how do we define our technological advancement? To answer this, let us look at a favourite cartoon from childhood - The Jetsons. Why were we so mesmerised by this cartoon? Was it because of the antics of the Jetsons family or was it the technology around them, in their household, school, office, etc.? Look around you, in your household, your social life, your office; is every little piece of technology around what you would have imagined existing 15 years ago? We often take for granted the smaller innovations around us for those larger than life inventions. For example, imagine a life without a pen or a ball pen - you would still be using a feather with an ink pot. Take for example the humble washing machine, where would you be without it?

Let's take a look at some new small innovations which are absolutely valuable in our technological evolutions. After all, it is these small innovations in large numbers that make the difference.

## Laser Flyswatter

This is every Sci-Fi geek's dream come true, owning their own little Death Star, except of course in this case the laser flyswatter would be zapping mosquitoes out of the air with pinpoint accuracy.



Zapping mosquitoes with lasers is a reality

Imagine having a laser defence grid in your bedroom to fry those disease-carrying, pesky bloodsuckers.

Intellectual Ventures' laser flyswatter (the weapon of mosquito destruction) is a device that detects and analyses mosquitoes by the frequency of their beating wings and then zaps them with a laser beam that literally burns them up mid-air (rest assured it won't be targeting a butterfly, or your siblings if you have shrunk them with a shrink ray [reference movie: Honey I shrunk the kids]). It can even detect the difference between the male and the female mosquito. The system used to give a public demonstration was used to shoot down a

few mosquitoes but was capable of 'terminating' 50-100 mosquitoes per second (anyone thinking Starship Troopers?).

The applications of this go beyond the bedroom; imagine having a laser fence around a village where malaria is prevalent or a laser grid around crop fields (the system can be configured to zap locusts with a higher energy output). This system could utilise solar energy to become a stand alone unit.

## Water atomising showerhead

How many of us have gone on water-saving missions at home and ended up frustrated because we can't let go of that





## What? LOL!

A recent Facebook study shows 'Lol' to be the least popular way to express laughter. <http://dgit.in/nomrelol>



## Indian telecos penalised

Government of India just imposed a penalty of over 10 crores on telecom companies. Read here why: <http://dgit.in/igovpenalty>

Feature

refreshing shower, as a bucket of water won't compensate so easily? But it is this little action in our everyday life that goes ahead to save a lot of water. Showers have pretty much been the same in the past 100 years or so, spewing out large drops of water. Nebia, a Kickstarter project, has taken a big leap ahead and created a showerhead that atomises water into millions of tiny droplets, thereby spreading the same amount of water over 10 times more surface area. Those who have tested it have said that the experience is different but more refreshing and hydrating.

In real-life use, the amount of water usage during a shower is reduced by an astounding 70 per cent. According to Nebia's estimates, California could save 200 billion gallons of water or around \$4 billion annually if they switch to Nebia showerheads. In a country like India with its huge population and scarce resources, an innovation like the Nebia showerhead could ensure that a lot more people have access to pure water because of the savings achieved.

The CEO of Apple, Tim Cook, and Alphabet Executive, Eric Schmidt, are the early investors of this project.

## Flushable bedside toilet

We all know how difficult it is for the elderly and the sick to perform their daily

task and we always wish that we could somehow make things easier for them. One of the ways of doing that is by making daily washroom activities easier for them. It is a small thing but it makes a big difference when it comes to comfort. Toto has created a flushable, moveable toilet that you can move anywhere in the house based on your requirement, independent of the house's layout. It was created as an alternative to the currently available portable toilets that use a bucket and have to be cleaned. The Toto flushable bedside toilet on the other hand has plumbing and the waste goes into a tank and therefore doesn't require any cleaning. The flush operates by pressing a button and it also comes with a deodoriser.

The flushable toilet can be used at home, in hospitals, at old age homes and also deployed on projects in remote areas.

On the lighter side, the flushable, moveable toilet will take glamping to a whole new level. Also, this is a couch potato's dream come true. If this isn't



This toilet is a boon to the elderly

enough, imagine saving that expensive carpet in your house from the stud who had a little too much alcohol in your house party.

## Nixie the Wearable and flyable selfie drone

How many times have you missed capturing those beautiful moments on video? How many times have you actually used the selfie stick that you bought last month? These are the needs of the current times (when a helmet-mounted camera won't do) that need to be solved and the answer is in the form of a simple wearable drone, Nixie.

The concept of Nixie is brilliant, it is tiny and hence wraps around your wrist like a watch. When you press a button, it flies off your wrist to a short distance, turns around and shoots a video or photograph of you. It doesn't have a remote, just let point it in the direction you want your selfie from and it does the rest; its sensors make it aware of the location and so you don't need to take any effort to position it.

The wearable drone would also be a boon to those engaged in adventure sports like, rock climbing, who simply cannot free their hands to take a selfie. Also, imagine a future where this is taken further and law enforcers are equipped with a wearable drone which could quickly give them a better perception of the crime scene or their patrolling area.



Nebia Shower uses 70% lesser water compared to the typical usage



## Cassette player to speaker

How did this genius convert an old Fisher-Price cassette player to a bluetooth speaker? Find it here: <http://digit.in/fpbskpr>



## Learn them all!

How many of these tricks did you know you could pull off on your Apple watch? Read here: <http://digit.in/applewtchtrks>



The Nixie can be used for patrolling

## Smart clothing

If you think that our clothes haven't evolved then think again, over the scale of time, our clothes have evolved from hides of animals to clothes made up of different types of fibres for different purposes. If you look hard enough, you will find videos of liquid 'repellant' clothes online. Clothing may be too mundane to think of as technology products, but this where we are wrong, pretty soon the hashtag #SmartClothes will be trending on social media. For example, Google, along with some partners, is developing smart clothes that will sense touch. Imagine controlling the functions of your phone with the help of your clothes, like for example, control the volume of your phone's ringer or music app by sliding a finger across the palm of your glove, or change tracks back and forth by tapping the left or right forearm of your sweater. Although touch sensitive clothes are not new, the way Google is going about

it is different. It is diving deeper into the concept of touch sensitive clothing by trying to make a conductive yarn. Which basically means that the tech won't be embedded after the clothes are made, the clothes will be woven with them. The tech won't be a wearable device, it will be the whole cloth itself.

Imagine a future where baby clothes will automatically let you know if the baby is awake in the other room just by sensing its heightened movements or clothes that can sense your body movements when sleeping and adjust the softness/rigidity of the bed accordingly.

## Autonomous shopping cart

As boring as this may sound to you, this one has the potential to make a lot of difference in the way we do our shopping. Imagine not having to accompany your parent or spouse to their weekend grocery shopping at the store and getting to watch the game on the tube, or better yet, getting to frag some poor saps on an online game; the smart cart would take care of the mundane job of following around with the groceries on its own.

There is already a lot of research going on with autonomous shopping carts as they are something that will bring about a pleasant change in the mall shopping cul-

ture. Think of what self-driving cars can do for road congestion, the same can be done by the smart carts for the store lanes.

The people at Chaotic Moon have come up with the Smarter Cart that uses a Kinetic sensor paired with a Windows 8 tablet to follow the shopper around in the mall. In fact, it does more than just that; it detects the items put in the cart and matches them with the shopping list. Smarter Cart is also equipped with voice recognition so that you can ask it the location of items in the store or let it know when you are done shopping.

A very simple application of this would be on a wheelchair. Now you may



IoT devices will make smart homes possible in the future

think that we already have motorised wheelchair but imagine a person walking beside their specially-abled loved one, with the kinetic sensor keeping the wheelchair's pace with them, instead of standing behind and pushing the wheelchair. The human value is immense.

## Digital living

Internet of Things (IoT) is the next revolutionary change in the way we live our lives and this is something that will affect the smallest gadgets in your house. Basically, IoT gets your regular dumb gadgets connected to the internet. Like for example, your garbage bin will be equipped with a scanner which will scan the empty juice box that you just threw in it and add it to your shopping list; going one step ahead, if you order some special brand of juice which isn't available easily, your garbage bin could let your regular store know that you just ran out of that juice and might come shopping for it. The possibilities



Smarter Cart can detect items placed inside the cart





## Take over the web!

Check out the list of these 6 design trends that are taking over the web: <http://dgit.in/newdesigntrnd>



## Android Experiments

To show how Android is progressing and what it is working on, check out Android Experiments <http://dgit.in/andrdeprmnt>

Feature

with IoT are endless. Some retail shops have already digitised the shopping experience; the Burberry store in Regent Street, London has electronic chips in the products which make the viewing mirrors turn into visual displays that show information about the product that you are trying on, meanwhile Tesco's Endless Isles display allows shoppers to try on the clothes virtually.

### Dirt-sucking floormat

All of us can identify with the issue of mud spreading around the house because of dirty footwear. We have tried different materials for mats to optimally clean our shoes but this in reality leaves a lot of dirt still clinging to our shoes. So what do we do here? We use the same technology, vacuum cleaner, that we developed to suck dirt from our floor and combined it with the floor mat. And voila, we have a floormat that literally sucks off the last bit of dirt from your shoes.

Japanese design company Paionia Furiyokuki has come up with the product, naming it the Air Vacuum Mat. While its spring brushes scrape out the dirt, the air vacuum sucks it out thoroughly. The dirt is collected in a separate unit which can be cleaned out later. The company has made the Air Vacuum Mat energy efficient as well as it only activates the vacuum tubes under the area where the shoe is placed.



The Air Vacuum Mat sucks off dirt from shoes

The utility of this product does not stop with the house door. This can be used in hospitals and pharmacies to maintain hygiene. This would also bring down the cleaning costs of malls.

### Smart Back Brace

Many people don't realise when they are working or walking with an incorrect posture. While we make a firm resolution to correct our posture, we often forget about it when working and get back to slouching. The Smart Back Brace helps you correct your posture with a little tech touch. While it is similar to many other clavicle braces available in the market, it differentiates

itself with the fact that at its heart it has a tiny electronic unit which monitors the tension in the straps and vibrates if it detects when the user is slouching. The goal of this is to train the mind that the body will receive a vibration if it slouches, so over time the user stops slouching automatically. The device is based on a simple concept but it provides so much value to a person's physical well being.

### No-finger-touch contact lens remover

Most people get squeamish when it comes to inserting and removing contact lenses. It takes a lot of practice to become good at the same, while some may even give up on them all together.

Medi Toreck has come up with Meruru, the tool that lets you insert and remove soft contact lenses effortlessly. The tools consist of a polycarbonate forceps with a silicone tip and a silicon stick which has suction action. The cup end of the stick is used to pick up the lens and place on the eye while the forceps with silicone tips are used to pick up the lens.

We may keep on thinking that it is always the quantum computers or the gravity drive that will propel us into the future but we fail to notice all the small and mundane technology innovations that are slowly but steadily propelling us into the future. So the next time you think we are stuck technologically, take a look around yourself and think if the tech scene was the same 10 years ago.



Prevent slouching with the Smart Back Brace

IMAGE CREDIT: [HTTP://SMARTBACKBRACE.COM/](http://SMARTBACKBRACE.COM/)



### From the labs

The Internet will reach every corner of the globe. Find out how that's happening soon.

### Tomorrow's tech

Move over Moore's Law, quantum computing is here. Learn what the future holds.



The F-35's vertical landing and hover capability was demanded by the US Marine Corps

# F-35: A Trillion Dollar Mistake

"A camel is a horse designed by a committee" goes a proverb that applies all too well to the horribly overbudget and underperforming F-35 project.

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**T**he decline of Russia following the end of Cold War meant that it couldn't keep up with the US pursuit of achieving absolute air dominance. It's little wonder why the stealth-capable Lockheed Martin F-22 Raptor asserted its dominance as the world's premier fighter jet platform largely unchallenged at the turn of the millennium. Nothing underscores this better than the fact that Russia's fifth generation answer to the US stealth fighter, PAK-FA, still hasn't been deployed.

The Lockheed Martin F-35 Lightning II is the successor to the mighty F-22 Raptor. Prima facie, that makes it sound like something that would destroy everything in the airspace and then fly over to Mars to take on the space worms. And that seems pretty accurate if you go by the sheer amount of destruction it has wrought on

the silver screen. However, the Hollywood versions of the upcoming fighter jet invariably end up in a spectacular ball of flame after destroying half the city in movies such as The Avengers, Man of Steel, Green Lantern or Die Hard 4.0. This fate just might ring true for its real-life counterparts but more on that later.

### Multirole Fighter

Although the F-35 is supposed to be a successor to the F-22, it hasn't exactly been designed to surpass its predecessor in terms of performance. At a unit cost of \$361 million, the F-22 was a silver bullet commissioned at the height of the Cold War to deny Russians access to air superiority. Let me reiterate, that's the price of one piece and not the entire F-22 project. The end of Cold War and the decline of the Russian war machinery meant that the United States Air Force (USAF) was in the market for a more cost effective fifth generation fighter. The F-35 programme is supposed

to replace existing fourth generation air-force and navy platforms such as the F-16 Fighting Falcon, F-18 Hornet, A-10 Thunderbolt II, and the AV-8B Harrier II.

Designed as a multirole fighter, the F-35 achieves this versatility through three separate platforms within the same family that share up to 80-percent parts for logistical simplicity and to ensure cost effectiveness. These platforms, classified according to takeoff and landing capabilities, include the F-35A (CTOL: Conventional Takeoff and Landing), F-35B (STOVL: Short Takeoff and Vertical Landing), and F-35C (carrier-based version). The F-35A variant is designed according to USAF needs and is the closest to a regular fighter jet design, which does away with the complicated and weight adding STOVL capability. The F-35B was designed to fulfill the US Marine Corps requirement of short takeoff and vertical landing, which adds to the total weight and fuel requirements for the difficult to achieve (and control) hovering and vertical



## Patterns, so predictable

Pattern locks have now become as common and predictable as passwords. Read the entire study here. <http://dgit.in/cmnptrns>



## Why Microsoft, why?

Microsoft has no intention of telling us what's within Windows 10 patches. Read more here: <http://dgit.in/winxptch>

**Military tech**

landing manoeuvres. The F-35C is a larger version featuring increased wingspan and reinforced fuselage to aid in carrier-based takeoff and landing.

## Jack of All Trades

The uniqueness of the F-35 programme can't be fully understood without a primer on different types of military jet aircraft. This includes fighter jets which are primarily focused on interdiction – that is engaging and defeating enemy jet aircraft. This type of military jets are designed with an emphasis on manoeuvrability, speed and a blend of armament as well as avionics for hunting down and destroying enemy aircraft. The F-15 Eagle is a good example of a dedicated fighter jet. Bombers such as the B-2 Spirit eschew manoeuvrability and speed for increased range and payload capacity in order to reach out and destroy ground-based targets. These aircraft have a significantly higher operational ceiling to escape ground-based defenses, but they are still vulnerable to enemy interdiction. Attack jets combine the best virtues of fighters and bombers in a platform designed to enter hostile territory and take out enemy assets with pinpoint precision and great speed. These aircraft may not have an impressive payload capacity or range, but that also enables them to be fast and able to defend themselves against enemy aircraft. USAF's trusted tankbuster A-10 Thunderbolt II is the finest example of a military attack jet.

Aircraft that combine some or all of these attributes are classified as multirole fighter jets. There have been excellent multirole fighters in the USAF arsenal such as the F-16 Fighting Falcon and F-18 Hornet, but the F-35 programme takes the concept of a multirole fighter to the next logical level and includes the vertical landing and hovering capability of the AV-8B Harrier II. Developed jointly with UK, the Harrier II is a one-of-kind ground attack aircraft that's capable of vertical takeoff and landing – a feature that isn't found in any other military jet due to the monumental engineering complexity and limitations involved. The F-35B is the first multirole fighter to incorporate Short Takeoff and Vertical landing (STOVL). It

achieves this with a rear jet exhaust that can be swivelled ninety degrees to create pure upward thrust. This works along with a massive centrally-located lift fan capable of generating enough upward thrust to complement the downward pointing rear nozzle. These two generate enough lift to enable short takeoff, hovering, and vertical landing.

## Master of None

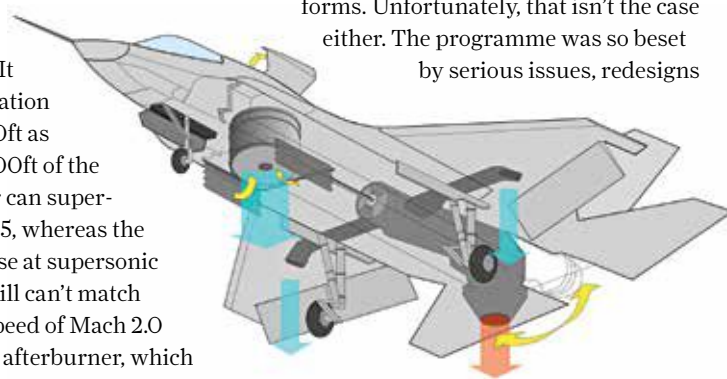
This unique capability stems from the US Marine Corps requirement of a close support aircraft that's capable of being deployed and land even in conditions where there's no access to a conventional airstrip. This essentially makes the F-35 the Swiss Army knife of military aircraft. Unfortunately, the problem with the Swiss Army knife is that it isn't as good at individual tasks as the tools specifically designed for those tasks. This phenomenon is reflected in the F-35 as well. It has a lower operation ceiling of 48,000ft as opposed to 65,000ft of the F-22. The Raptor can supercruise at Mach 1.5, whereas the F-35 cannot cruise at supersonic speeds. And it still can't match the F-22's max speed of Mach 2.0 despite using an afterburner, which can propel the F-35 to a maximum speed of just Mach 1.6. The extra weight added by the STOVL capability severely restricts the combat radius of the F-35B down to 450 nautical miles as opposed to the 600 nautical miles figure of the F-35C.

The worst victim of this engineering complexity is manoeuvrability. The F-16, a model that is supposed to be replaced by the F-35, is capable of taking sustained turn load of 9g, whereas the F-35 had its maximum sustained g loading dropped down to 4.6g. It's also objectively slower than the F-16; taking 43 seconds longer than the outgoing multirole jet to accelerate from Mach 0.8 to Mach 1.2. What's more, the F-35 also requires complex manoeuvres to reach its top speed of Mach 1.6, but doing so isn't practical since it uses up almost all of its onboard fuel. Needless to say, according to a leaked

report on a mock dogfight conducted between the F-35 and F-16, the former didn't have a chance against its faster and more manoeuvrable predecessor in a mock dogfight between the two. Worse yet, the F-16D it engaged unsuccessfully in the mock dogfight was bogged down with the added weight and aerodynamic drag of external fuel tanks. This report's authenticity was later confirmed by F-35 maker Lockheed Martin itself. On the other hand, the US government-funded global military think-tank, RAND, was a lot more damning in its report, which said that the F-35A "can't turn, can't climb, can't run" while describing its air-to-air combat performance.

## A Trillion Dollar Mistake

Well, you might argue that at least the F-35 is supposed to be a cost effective replacement to multiple fighter platforms. Unfortunately, that isn't the case either. The programme was so beset by serious issues, redesigns



The F-35 hovers using a swivelling rear exhaust and central lift fan

and delays that the unit procurement cost of each F-35 is upwards of \$300 million and nearing that of the super expensive, but also highly competent F-22 Raptor. The F-35, on the other hand, can't even outfight outdated fighter aircraft it was designed to replace. Then there are other serious unresolved issues such as fire hazards posed by the fuel storage design, serious wing drop problem, poor radar function, ejection seat failures and aircraft software that has been a constant source of complaints. With a total development budget of \$1.5 trillion and counting, the F-35 programme is turning out to be one of the most expensive mistakes committed by the US armed forces. **[1]**

## Hail privacy

Afraid of giving your phone to friends who don't have any regard for privacy? Check this app here: <http://dgit.in/prvcyappn>



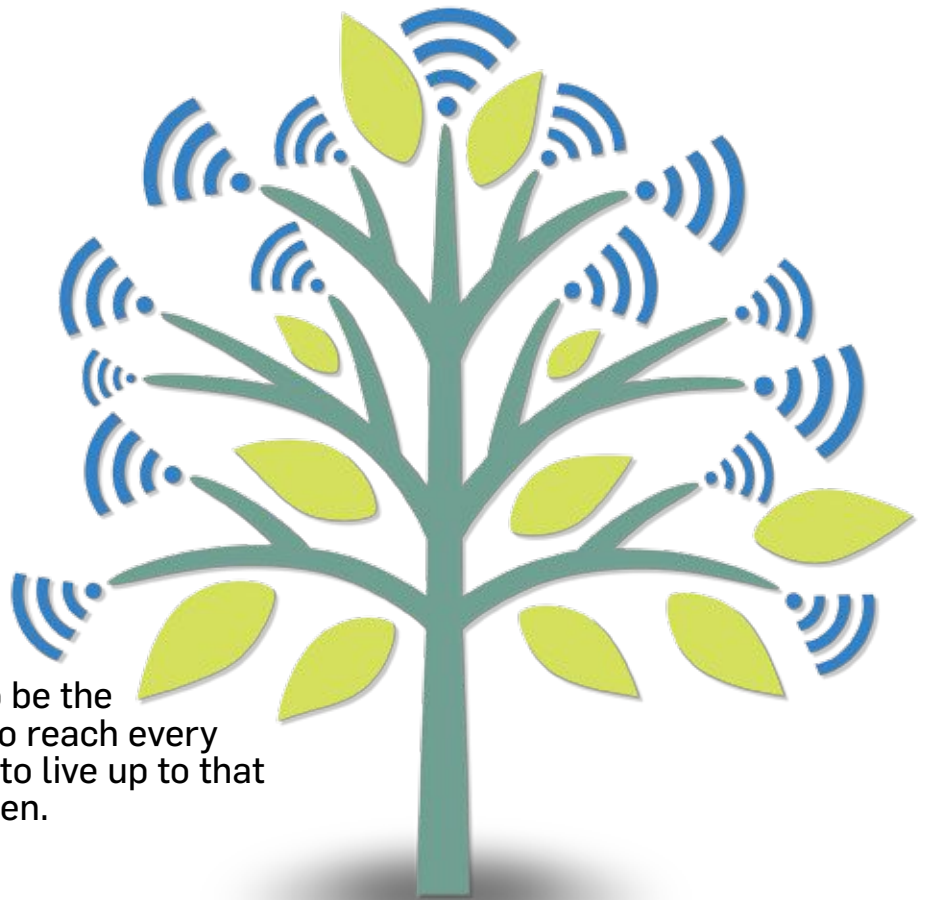
## Firefox can now add-on!

Mozilla has announced one of the biggest updates. It's opening the gates for a number of add-ons like other browsers: <http://dgit.in/mozfireaddon>

# Let There Be Light!

The internet was supposed to be the great equaliser. But it needs to reach every nook and cranny of the globe to live up to that promise. That is soon to happen.

Sahil Dawka  
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**W**e are all the same form of life, living in the same world at the same time. But are all men created equal? Absolutely. Not. Even Malcolm Gladwell would agree when we say that we are born into the circumstances that eventually shape us and define our life's trajectory. No matter how much of a believer you are in hard work, having that little edge always helps. It may be in the form of the family name you are able to tack on (Rockerfeller or Ambani sounds pretty good right?) or it may just happen to be down to the place of your birth. However, this day and age has its benefits too. Most of us have access to a conduit of pure power, an alternate universe that puts everything within the grasp of those who reach: the Internet.

## Information Ether

Imagine rewinding to a time before the Internet pervaded our lives. If you wanted to know anything, you had to ask

someone who already knew, or search through a library catalogue hoping to find the information that you sought. Today we have the Internet – books, recipes, records, pictures, music, maps, and even complete collegiate courses – just a finger tap away. Answers of any kind (and more questions too), knowledge of any form, information in any format – if you know what you are looking for, chances are that you can find it online.

Other than entertainment and education, the Internet also allows electron-speed and light-speed communication, which is the basis for today's globalised financial trading and commerce. Calling the Internet a 'network' is no different than defining our brain as one. The human brain is simply a network of interconnected neurons after all. It is much more apt to think of the Internet as a super-resource, or a combination of multiple resources; mainly communication, information, and awareness. With access to the super-resource that is the

Internet, one individual can run an entire business, or a whole country can ascend to new heights as we had discussed in last month's cover story.

Moreover, on the world wide web, everyone is equal in a truer sense than we are in the physical world, making it the fairest game there is. That means, no matter who you are, where or to whom you were born, if you have access to the internet and know the basics of its usage, you now have the chance to change your destiny. All men may not be born equal, but all men log on equal. You can take your life anywhere you want it to go, starting with nothing but your intentions and an internet connection. Sadly, that is what two-thirds of the world's population lacks, and that is what some giants in the technology industry are aiming to change!

## The Aim: Selfies from Siberia

Two-thirds of the world's population has no access to Internet. There are many who





## Get Wi-fi in Uber,Ola

After a tie up with Airtel 4G, Uber and Ola announce free Wi-Fi to their customers in India. Read more here: <http://dgit.in/olauberwifi>



## GIF on Facebook now!

Facebook is now testing its GIF support for posts as well as ads. Are GIF ads coming soon on facebook? Read here: <http://dgit.in/fbgifad>

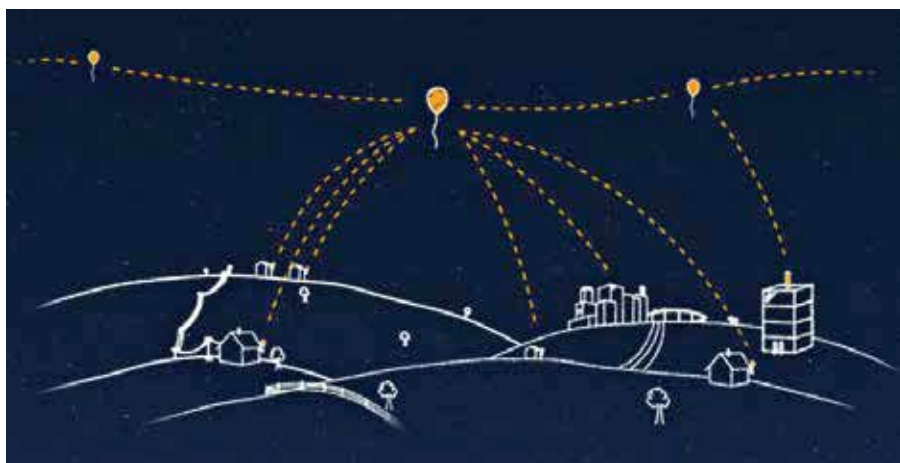
From the labs

live in places that can't be reached by fibre optic cables due to economic viability. The entrepreneurially inclined audience will perceive this major problem as a major business opportunity. Two-thirds of the world without internet is potentially double the number of internet subscribers that exist today as potential subscribers. The crucial hurdle is making sure that the cost to the subscriber is low enough that it makes sense to subscribe in the first place. It will benefit both sides as the Internet is the gateway to a level playing field for the whole world, and a gateway to much needed progress and development for many. With the ultimate goal of affordable Internet access for all, who will rise to the challenge?

## The Game: Internet for All

There are currently few technology-industry leaders competing for this goal with dedicated projects to deploy novel infrastructure. However, solutions for obtaining connectivity around the globe have existed for almost 15 years now in the form of satellite constellations, which are unfortunately not commercially viable without targeted business plans, and abandoned TV broadcasting frequencies

Google was the first company to announce a global-scale internet-for-all project with much hype and media attention. In June 2013, Google Loon was revealed, a moonshot that had been in development within Google X labs as early as 2011. Their plan to solve the internet coverage problem? Balloons! No, this is not another imagination exercise. Fifteen metre wide Loon balloons will ride stratospheric wind currents 18-25 km above the surface of the Earth, well above airplanes and well below satellites. A network of these Loon balloons will synchronise and coordinate their movement to cover and provide connectivity to the required area, with each individual Loon balloon covering an area 40km in diameter. The balloons are filled with Helium and have a variable buoyancy system in order to control their altitude, which determines which wind current they are riding in the Stratosphere, and therefore the direction of movement. The balloons each last between 100-200 days in the



The Google Loon project employs high-altitude balloons to provide internet connectivity

atmosphere, although the electronics are re-used after it is taken out of service. The electronics hang under the balloon, and get their power from optimally aligned single-crystal high efficiency solar panels. They have a Lithium-ion battery pack for storing the energy required for use at night. The Loon balloons have transceivers that communicate on the freely available unlicensed ISM (Industrial, Scientific, Medical) bands of 2.4 GHz and 5.8 GHz, and LTE. Users have to install a special antenna to be able to connect to the internet from their remotely located homes. Information travels through the antenna, a chain of balloons, and finally to a ground station that has a connection to an ISP.

The Google's Loon project doesn't aim to provide standalone internet connections but utilises preexisting telecommunications infrastructure and extends it via their balloon network. Loon was

first deployed and tested in New Zealand, where a farmer was the first person to use the service. Previously, his only means of connection was a satellite connection which cost over a thousand dollars! In addition to the antenna, users can get coverage directly on the phones and other LTE enabled devices (dongles) using a special Loon SIM card. After the New Zealand tests, the project has been being evaluated in Brazil, and most recently Google has signed a contract with the government of Sri Lanka. It will be the first country to have complete Loon supplied internet coverage in the world!

Soon after the announcement of Loon, in August 2013, Facebook, Samsung, Ericsson, Nokia, Opera Networks, Qualcomm and MediaTek announced the creation of internet.org. It's a non-profit organisation aiming to deliver affordable access to selected internet services in developing countries. Not long after launch, the consortium had been criticised for being too selective with the access provided. In other words, for violating net neutrality. The consortium have opened up since then, creating the internet.org platform for anyone who meets certain specified conditions. It also launched an as-yet-unnamed project, whose official description hasn't revealed more than the fact that it will be a network of UAVs called Aquila drones, which were developed by engineers from Ascenta – an aerospace company that Facebook acquired for this purpose. The drones beam down Internet connectivity using high-throughput



The Google Loon visualised



## Windows 10's 'new' Firewall

The new Windows 10 comes with advanced features in its firewall. Read everything about it here: <http://dgit.in/winxadfirewall>



## Don't miss this!

Check out here what happens when a bear eats up a GoPro here: <http://dgit.in/beareatcam>

lasers, however, experts remain sceptical from their initial description. Lasers inherently require line-of-sight and need to be focused, i.e., they can't transmit across a wide field of view.

Satellite constellations such as Iridium have existed long before the turn of the millennium. Satellite constellations are groups of artificial satellites that work in tandem to provide coverage all around the globe as evenly as possible. The orbits of the satellites are synchronised to maximise total coverage area and minimise interference. The satellites of Iridium were manufactured by Motorola



The Aquila Drone

and they provide telephony and communication via 66 active satellites in orbit. Iridium Communications sells access to their products and services to major companies. Another service is the Broadband Global Area Network, which is provided thanks to the INMARSAT constellation. Globalstar and Orbcomm are also constellations similar to Iridium. Coincidentally, Iridium, Globalstar and Orbcomm have all filed for bankruptcy at some point in their corporate existence, although they have still managed to survive. A seemingly completely altruistic venture is Outernet, which is a non-profit data broadcast service started in 2014. It transmits 200MB of open information every day to users, who are required to build their own receivers. However, this player appear to have stayed out of the Internet-for-All fray. A satellite constellation that does plan to reach out to the unconnected is O3b Technologies, which is backed by HSBC and Google. There is also a constellation named OneWeb, planned to launch by 2019, composed of a whopping 700 satellites!

Another means of getting Internet access to places where there is none using pre-existing infrastructure, is the TV

### DID YOU KNOW? (STRATOSPHERE FACTS)

- Called so because it is vertically stratified (has air currents in layers)
- Has almost no turbulence, temperature rises as you move upwards
- Contains 90% of the ozone layer
- Contains bacteria, hence it's also part of the biosphere.

White Space spectrum. The shift to digital television means that many frequencies that were once licensed to analog TV broadcasters are now free and unused. Remember the time of cable when our televisions scanned across the whole spectrum provided (VHF and UHF) to obtain the list of channels? Television broadcasters occupied those bandwidths just as telecom companies occupy 3G/4G bandwidths. Moreover, they (analog broadcasters) had to use bands of frequencies separated by gaps in order to avoid interference, which showed up as the white noise between channels while scanning. These gaps are referred to as TV White Noise, and will be used (under certain guidelines) to broadcast the much higher throughput digital signals required for upto 15Mbps bandwidth Internet connections. Broadcasting over these frequencies (that are in the range of 54MHz to 806MHz) gives much better coverage (10km vs 100m radius) at a lower power cost compared to traditional Wi-Fi (2.4GHz and 5GHz), along with better penetration, earning this technology the nickname "Super Wi-Fi". Google and Microsoft have already invested in and

### SATELLITE CONSTELLATIONS

- GPS - Global Positioning System (USA) - Navigation
- GLONASS - GLObal NAVigation Satellite System (Russia) - Navigation
- RapidEye (Germany) - Observation (Sensitive even to changes in chlorophyll content)
- INMARSAT (UK) - Telecommunications (Last to contact Malaysia Airlines Flight 370)

piloted projects that provide Internet access via the White Space spectrum in the United States of America, some places in the UK and in many countries in the African continent. Recently, Microsoft has partnered with the government of Andhra Pradesh to provide low cost Internet services to four schools in the Srikakulam district. Though our current crop of devices do not have the ability to directly access this spectrum of frequencies, that is all slated to change soon.

## The Flat World

With so many electromagnetic waves flying around, the winner will be soon decided. But once the playing field is level, competition will undoubtedly increase, as will transparency and efficiency in almost every facet of life. Since currencies such as the dollar are based on words rather than actual resources, money isn't much different from circular logic. As often is the case, someone's gain is another's loss. Does that mean even in the Flat world, the rich will get richer and the poor will get poorer? Or will there be a natural requirement of a new world order? These questions are best left to the sociologists and anthropologists. We are here to discuss the technological aspects of a Flat world. One thing is clear, our infrastructure is expanding upwards. First to ascend was communication. Once it has proliferated to its fullest, will power be next?

With the latest advances in artificial neural networks, AI is improving in leaps and bounds. Perhaps unavoidably, it is being developed on the same networks that connect to the global Internet, which makes things pretty easy if ever an evil self-serving AI wanted to rule the world. On the bright side, since neural networks learn by example, the AI might respect us like we respect our parents. It might even invent a device that will allow digital technology to interface with our consciousness, though we will definitely invent such a device regardless. Maybe the social and technological aspects lead to the same answer: a collective human consciousness, moderated by technology? That is the ultimate equality among humans, when everyone can literally feel the same. First step: Internet for All!



**Facebook knows its you!**  
Facebook's face recognition is so advanced that it doesn't even need faces! Read more: <http://dgit.in/fbadvncdfr>



**Dont let it get hacked!**  
Thanks to IoT, a lot of devices including automobiles can be hacked. So what are car makers doing about it? Read here: <http://dgit.in/prvntcarhack>

Tomorrow's tech

# At Moore's end: After five decades of driving innovation

After fifty years of following the Moore's law, computing is poised to take the quantum leap.

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Here's a thought: if the number of people in your house were to double every year, you will end up with 512 people in ten years, provided you started off living alone. Here's another one: if you were spending a thousand bucks for yourself in year one and thousand bucks for 512 people in year ten, that would mean less than two bucks expense per person. Lots of savings, maybe, but your house will be somewhat overcrowded, possibly leading to fights and struggles. The probable future of Moore's Law is similar.

Back on April 19, 1965, Gordon Moore, a researcher at Fairchild Semiconductor wrote a paper predicting the pace of growth of technology. He said, transistors on a single chip will double annually, while cost of the chip will remain constant. This was fifty years ago, when technology was nascent. Moore's prediction was based on observations drawn from components used per integrated circuit (IC), and respective minimum cost-per-component, between 1959 and 1964. In 1975, he predicted that each chip will contain up to 65,000 components, dou-

bling annually within the time span. From 1975, technology more or less followed Moore's observation. His predictions became a reference point for researchers and developers to push processing power and mobility solutions beyond existing threshold.

But there comes time when everything reaches its peak. At the 2011 International Supercomputing Conference it was conceded that the Moore's Law might not be sufficient to drive processing innovation rapidly forward any longer. We are at a time where simply adding more transistors to a chipset and increasing the number of cores in a processor does not ensure viable progress in technology. Most of our tasks run neatly in both PCs and mobile devices sporting four-core and eight-core processors. The 12-core and 16-core processors of the future may be theoretically feasible, but do we really need them?

There is an issue with simply adding transistors to a chip. Once the number of layers of components in a chipset hits a certain threshold, Heisenberg's Uncertainty Principle will kick in. This will lead to a breakdown of subatomic particle paths, causing electron leaks and shorting circuits. Massively powerful processors that can melt down any time? Certainly doesn't sound like the future.

## The Impetus and the Drive

The Intel 4004, Intel's first microprocessor, featured 2,250 transistors back

in 1971. Three decades later, the Intel Pentium 4 HT processor sported 125 million transistors – more than 50,000 times more than the Intel 4004.

In 1974, Robert Dennard at IBM presented transistor scaling equations to reduce operating factors along with dimensions, thereby shrinking transistor sizes. Another major milestone of Moore's form factor-shrinking prediction is Apple's introduction into the technology world. The co-founder of Apple, Stephen Wozniak, designed a device in 1975 that would go on to become the Apple I Personal Computer, which was followed by the Apple II. These two personal computers raised microprocessor and chipset demands, calling for redesigning of circuit boards and shrinkage of component sizes. In 1979, Intel introduced the 8088 processor featuring 29,000 transistor units.

The Intel 8088 notably featured in the now-legendary IBM PC, back in 1981. A year later, Intel revealed the 80826 processor (with 1,34,000 transistors), keeping up with Moore's prediction of the rate of advancement of technology. Components were not only getting smaller by dimensions, they were becoming more efficient in terms of energy, expenses, assembling and optimum power supply. Towards the end of the '80s, Intel unveiled the Intel 486 processor, with 1.2 million transistors – by far the most advanced microprocessor at that time.

The '90s were the era of Intel's Pentium, alongside the popularisation of port-





## How it works?

Ever wondered how a film projector works? It's pretty fascinating to say the least. Watch it here: <http://dgit.in/hitflmprojctr>

## Now, multi-forward it easy!

Need to send e-mails to multiple people or in bulk? Read here to unlock Multi-Forward on your Gmail account: <http://dgit.in/gmailmultifwrd>

able cellular communicators. Although the Motorola DynaTAC arrived in 1984 it wouldn't be until the mid-90s that 'cellphones' became popular across the world. By then, the Nokia 5110 Communicator became a beacon of advancement in technology. In 1999 came Intel's Pentium III series of processors, running on 28 million transistors.

With faster processing possible due to massive number of processing components being fitted into chipsets, the rest of the technology world started growing around processor advancements. Coloured displays and graphic-rendering processing units started becoming commonplace. "This is not going to stop soon," Moore famously stated about his own "law", in 1995. And it didn't.

## Stepping Down

The mid-2000s and onwards on saw the advent of multi-core processor into daily life, which trickled down to cellphones later. Advanced Micro Devices (AMD) were the first to showcase a dual-core processor in 2004, although Intel happened to release the first commercially-available dual-core processor in 2005 - the Intel Pentium 840 Extreme Edition. The world's first cellphone to ever run on a multi-core processor was the LG Optimus 2X, powered by the dual-core nVidia Tegra 2. These advancements not only signify technical achievements - they empowered the world to achieve further in terms of software, augmentative realities and cognitive branches. Graphic designs started improving drastically, researchers started using multi-core platforms to synthesize more data, advancing medical science, space research and immensely powerful setups capable of powering multiple facets of life.

It is in this phase that the Moore's Law started being threatened. Processors have now reached a stage where adding more cores and components do not drastically improve performance because our usual tasks run their fastest already on existing architectures. Technology has started developing away from the Moore-centric drive. The Moore's Law, in its actual sense, is not a "law". It does not have a prolonged scientific or natural recurring occurrence.

## GADGET TIMELINE



Apple 1 (1976)



Apple 2 (1977)



IBM PC (1981)



Apple Macintosh (1984)



Motorola DynaTAC 8000X (1984)



Nokia 5110 (1998)



LG Optimus 2X (2011)

It is more of an observation, that predicted that path of five decades of technological progress. However, silicon chipsets can only be this powerful, and adding more transistors to a processor will not considerably improve performance any further. Additionally, processor clock speeds have come to a standstill. This is because transistor speeds have not really increased much over the last few years, and power consumption optimisation at higher clock speeds cannot be attained. As a result, more data cannot be processed in a single clock cycle. Chipsets have huge lengths of internal wiring, and process impulses are scientifically impossible to be pushed

beyond the speed of light. Light traverses four meters in a nanosecond, and no law can push beyond that.

To look for alternatives to silicon computing, researchers started looking at nanotechnology and molecular computers, completely driving away from Moore's Law. Molecular computing developments involve IBM dabbling with oscillating circuits based on a single carbon nanotube molecule, wherein the entire circuitry depends on a single carbon molecule to speed up processing. This does not rely on the relay of electric impulses through wires to work out processes. Quantum computing tech-

## Never miss it!

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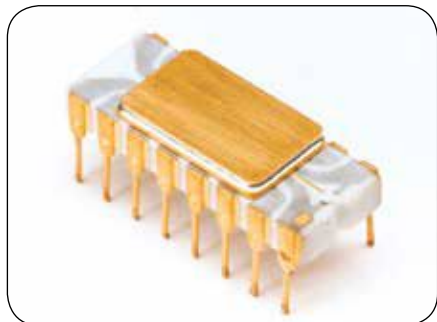


## Did you see them all?

Here is a list of the craziest things that  
went viral on the internet. Check it out!  
<http://digit.in/crazyviralint>

Tomorrow's tech

### INTEL TIMELINE



Intel 4004 (1971)



Intel 8088 (1979)



Intel 486 (1989)



Intel Pentium 1 (1993)



Intel Pentium 4 HT (2004)



Intel Pentium Extreme 840 (2005)



Intel Core2Quad (2007)



Intel Core i7-4th Gen (2013)

niques are the future, and they drift away from silicon transistor-based computing. Still at a nascent stage, quantum computing replaces electronic binary-coded data with qubits. The quantum bits are

quantum-mechanical representations of singular bits of information, preserved in two individually polarized states at the same time. The advantage of quantum computing over silicon-based computing


lie in the quantum principles of functioning. While a single bit in present-day silicon computing can function only in the binary state (i.e., 0 or 1), a qubit can simultaneously exist in a superposition of two states (0 and 1).

Hence, an arrangement of  $x$  number of qubits will give rise to  $2x$  bits of information, thereby processing data and gathering information at a much faster pace than any algorithm yet designed for the fastest multi-core processor. The quantum nature of this technology is far from the brute power increasing transistor rates, that have indeed made clock cycles faster, but now reached the horizontal slope of the developmental S-curve. Although quantum computing is yet to be finely developed, it is the future, and a need for faster computing alternative, that diverts technology away from Moore's half-century-old prediction.

### The End

Present developments have come with indications that the future needs an alternative to silicon computing. Holographic displays are being made real, so it might not be long until Samantha from *Her* becomes reality. While such technology is indeed lucrative, it needs more horsepower than the current breed of commercially available multi-core processors can deliver.

Although the inertia of gradual development with transistors and cores will continue for a few years, the world of technology is taking a turn away from adding cores and pumping up clocks to boost performance. The prediction that Moore had made back in 1965 has inspired innovators to power up chipsets to deca-core processors in 2015. And even if it does not remain valid in future, you still can't deny its contribution towards shrinking large, box-shaped computers with chunky keys into to sleek, metal and glass touchscreen devices with many times more computing power than ever before.

*Note: We have deliberately left supercomputers out of the equation, as the Moore's Law majorly pertains to technology that have powered devices in public sphere. *

# MOTHERS OF

NOT SO MUCH AS NECESSITY, BUT THE BRAVE AND UNIMAGINABLE EFFORTS OF PIONEERING WOMEN HAVE LED TO **SOME OF THE GREATEST TECHNOLOGICAL BREAKTHROUGHS AND INVENTIONS THAT MANKIND HAS EVER WITNESSED**

BY JAYESH SHINDE

**W**e live in a world surrounded by technology. A marvel of human ingenuity that has strived to make our life more comfortable than ever before – whether it's by the way we travel, work, access information or communicate. Technology has refined, rejigged and revolutionised the way we live our life. And we just can't imagine a life where we'd be comfortable living in a world devoid of our digital distractions and dependencies.

Imagine this scenario: You're living in a well-to-do household, where not only are your basic needs taken care of, but you also have money to spend on digital accompaniments to improve your standard of living – you know, things like a refrigerator, washing machine, microwave oven, electric kettle and other essentials. Then there are things such as your car, gaming console, television, laptop and other digital paraphernalia that surrounds us, adding another level of satisfaction and fulfillment altogether. Where would we be without our digital dimensions?

Technology has seeped into every facet of our life. When you come to this realisation, this revelation that technology is far more ubiquitous than you'd care to stop and think about, the next

question that begs to be answered is, well, who invented some of the technological marvels that we take for granted in the 21<sup>st</sup> century? Scientists, engineers, pioneers and mavericks they all were, but who were they?

In response to that question, it wouldn't be surprising to get answers such as Thomas Edison, Nikola Tesla, Alexander Graham Bell, Benjamin Franklin, Charles Babbage or even modern mavericks like Steve Jobs, Bill Gates, Larry Ellison and Elon Musk. And you won't be wrong to jump to those conclusions either. But, therein lies the tragedy of the situation.

Nine out of ten times it's always the men of tech breakthroughs and innovations who are remembered, never the women – despite their equally noble and path-breaking technological breakthroughs – which are seldom remembered in the first breath. That's a sad state of affairs right there. It would be a complete fallacy to assume that women innovators, technologists and pioneers didn't take as much effort to further the pace of technological breakthroughs and innovations as their male counterparts. Women are no less competent than men when it comes to holding their own in the arena of invention and ingenuity. We kid you not.

You want proof? Here it comes in all its shining glory!



# INVENTION



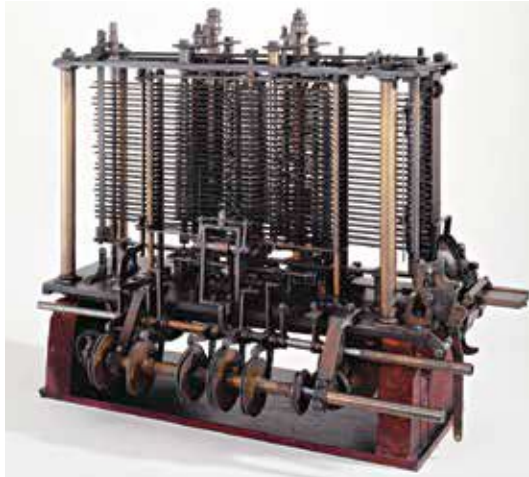
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## FIRST PROGRAMMER EVER!

We all regard Charles Babbage as the Father of Computing for conceiving the idea of a computer back in the early 1800s. However, his dream of an Analytical Engine would have taken a very



The first general purpose computer

different turn and fight shy of advancing into a modern computer if it wasn't for the efforts of Ada Lovelace – one of Babbage's closest friends and a brilliant mathematician in her own right.

Ada Lovelace is widely regarded as the world's first programmer and a rare visionary. Her most seminal work was done when she translated Charles Babbage's paper on analytical engines that was written by an Italian engineer for a Swiss journal back in 1842. Over a nine-month period, while translating the article, Ada ended up adding her own notes and thoughts on what the engine should do. It exceeded the original piece three times over, having also written a way (program) in which the engine could be used to predict a complex mathematical number sequence. She steered the direction of the Analytical Engine towards concepts that would ultimately evolve it into the general purpose computer that was built in the 20<sup>th</sup> century.

She introduced the concepts of looping programs and laid down the principles that guided the way letters and symbols could be recognised by future engines with the help of codes (kind of like the conception of ASCII or Unicode). She also envisioned that future machines would be used for more than just mathematical calculations and increasingly for other areas of human interest like

listening to music (no jokes!) and personalisation of computers.

This Enchantress of Numbers, as Babbage used to call Ada, died at the young age of 37, but still managed to leave a lasting impression on the course of computing in its infancy.

## QUEEN OF COMPUTING

In the world of computers, if you have to write code and programs in any language, you can't do it without a compiler to help execute it. Compiling a piece of code is, in fact, an essential, fundamental prerequisite to programming and developing rich, complex software. Come to think of it, without compilers the world of computer science would have been at a severe disadvantage, if it weren't for the efforts of a genius named Grace Hopper.

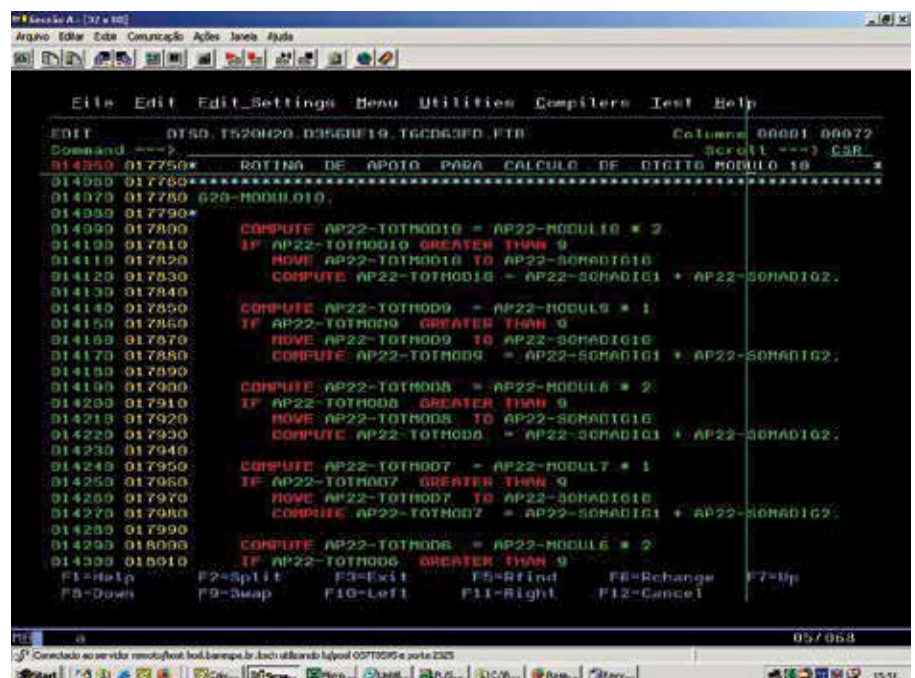
Before joining the US Navy, Admiral Grace Hopper earned a PhD in Mathematics from Yale University as far back as 1934, becoming one of the first women to earn that distinction. During the WWII, Lieutenant Hopper was "tasked with developing a machine [at Harvard] that could make fast, scientific calculations to understand such war-time things as the trajectories of warheads." Her pioneering work birthed one of the first digital computers at that time.

Using FLOW-MATIC, a programming language she designed, Admiral Hopper and her staff were able to make the UNIVAC I and II "understand" twenty statements in English. This was epic at the time because early computers understood English as gibberish, making it nigh impossible for researchers to code in a familiar language. After three years of hard work and perseverance, Hopper published her first compiler paper in 1952. If it were not for her leading effort, COBOL couldn't have been conceived or standardised back in 1959. Every present-day coder and programmer, and in fact anyone involved in any software development role, should tip their hats to Grace Hopper's efforts back in the very infancy of the computing era.

## MOTHER OF THE INTERNET

When it comes to the origins of the Internet, we've all heard of Tim Berners-Lee and Vint Cerf, but not many of us have heard of Radia Perlman. They call her the Mother of the Internet, and even though Radia Perlman despises the term we think it's very well justified, as she played an important role in ensuring the Internet worked seamlessly.

A PhD in Computer Science from MIT, Perlman was the first person to solve the problem of file sharing between two computers by her breakthrough 'spanning tree protocol algorithm' or 'STP' in 1985,



COBOL wouldn't have become what it has had n't it been for Grace Hopper





You can thank Radia Perlman for this

which was quickly adopted as the de facto standard for network bridging. She also created a computer terminal to handle traffic to and from massive interconnected networks. Radia made significant contributions towards the early advancement of the Internet and has over 80 patents in her name as a testimony of her groundbreaking work.

Without Perlman, we wouldn't have been able to share files or data connection packets over the rapidly expanding Internet in its early days. You didn't know that now, did you?

## WIRELESS WONDERGIRL

Hedy Lamarr is credited with co-inventing a piece of technology that's still in use in mobile phone towers and Bluetooth and Wi-Fi networks to this day. Born in Austria, Lamarr went on to become a Hollywood heartthrob before altering the course of wireless technology forever

during World War II. How she ended up becoming a pioneer of a critical method of wireless data transmission isn't unlike a Hollywood flick in its own right.

In a conversation with inventor, author and composer, George Antheil in Los Angeles, from whom Lamarr was seeking tips on improving her figure, radio-controlled torpedoes somehow turned into a topic of discussion. Why? It seems Lamarr was somewhat of an expert on torpedoes due to meetings she attended with her former husband, and this is how she ended up collaborating with Antheil on frequency hopping, a technique used for rapidly switching between a number of frequencies in a synchronised manner. They patented their secret wireless communication technology in 1942, but it wasn't until after the war in the 1950s that Lamarr's co-invention resurfaced and became a cornerstone of private telecom operators' radio communication infrastructure.

## TITAN OF TELEPHONY

Dr. Erna Hoover, an American mathematician born in 1926, is credited with creating a major impact on modern communication technology through computer soft-

ware. All this at a time when computers were still getting off their blocks.

While working at Bell Labs, Hoover devised an ingenious solution to tackle the volume of incoming telephone calls being received there. The solution required her to invent a computing method to handle telephone call switching instead of the hard-wired, mechanical switcher in use at the time. Her method took incoming call prioritisation efficiency to a never-before-imagined, unprecedented level – especially for calls during peak load times – allowing for a smooth, intelligent call switching process. And legend has it that Dr. Hoover came up with this innovative solution to the call-switching problem while giving birth to one of her three daughters in a hospital!

Dr. Hoover further has the distinction of being awarded one of the first computer software patents ever handed out to an inventor, male or female. It is no surprise then that her name is mentioned in the same breath as other revolutionary pioneers of computer technology.

## MOTHER OF OBJECT-ORIENTED PROGRAMMING

As one of the first women to earn a PhD in computer science, Barbara Liskov has been a significant contributor in the world of computing innovations. Her path-breaking work paved the way for modern object-oriented programming (OOP) languages, which is an epic feat indeed.

How did Liskov help create OOP? By inventing what's known as the CLU, an early programming language that helped lay the foundation stone for object-oriented programming back when software engineers didn't exist. She also developed



Love Wi-Fi? Thank Hedy Lamarr

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Modern telephony owes a lot to Dr. Erna Hoover

Argus, a programming language – largely an extension of the original CLU, that was meant for distributed program executions across multiple computers on a network (today's distributed computing). Liskov also created an object-oriented database system called 'Thor'.

If it weren't for Liskov's rare genius and her crucial advances in object-oriented programming, the computing world would've been deprived of concepts that led to a smorgasbord of modern OOP-based languages and operating systems, such as Java, Objective-C, C++, Visual Basic.NET and Mac OS X, among others. In 2008, Liskov was bestowed with the Turing Award for "contributions to practical and theoretical foundations of programming language and system design, especially related to data abstraction, fault tolerance and distributed computing." Well deserved!

## DIVA OF GAMING

The world of computer games would've been fairly desolate and mundane if it weren't for the efforts of Roberta Williams, an American game designer born in 1953. She has been credited with developing the concept of logic-based graphical adventure gaming. Here's how...

Best known for creating the adventure game series *King's Quest*, which had as many as eight sequels, Roberta Williams is hailed for pioneering, creating

and popularising this small but rapidly expanding corner of PC games. With her husband, Ken Williams, she co-founded 'Sierra On-Line' (later known as 'Sierra Entertainment'), a game development company that shaped the history of video games with its characteristic graphical puzzles and logical storylines.

Williams' games taught logic and problem-solving skills camouflaged in

an adventure setting, drawing the player in like never before – similar to the way Foursquare or Swarm gamify seemingly routine travel or journeys into adventures filled with location check-ins, badge collections, mayorship earnings and so on.

Ars Technica has called Roberta Williams "one of the more iconic figures in adventure gaming", while GameSpot ranked her at #10 in its list of "The Most Influential People in Computer Gaming of all time" for "pushing the envelope of graphic adventures" and being "especially proactive in creating games from a woman's point of view, and titles that appealed to the mainstream market, all the while integrating the latest technologies in graphics and sound wherever possible."

Think about it for a second: If it weren't for Roberta Williams' genius, the world of video games would be a lot worse off than what it is currently.

## APPLIED PHYSICS TO TECH

So far, we've read about women tech innovators who've either had a background in mathematics or engineering, but not pure physics. That changes with the introduction of Dr. Shirley Jackson, a theoretical physicist, who made a lasting impression in the evolution of several communication technologies.

The first African-American woman to get a PhD from MIT, Dr. Jackson



Robert Williams – 'One of the more iconic figures in adventure gaming.'



Dr. Shirley Jackson helped develop optic fibre.

completed successful experiments in theoretical physics. Her vast knowledge of physics and its diverse applications enabled critical advancements in telecommunications research while she was employed at Bell Laboratories. She did this by studying the fundamental properties of various materials, particularly substances used in the semiconductor industry.

Dr. Jackson conducted breakthrough scientific research that paved the way for others to invent communication devices such as the portable fax, touch tone telephone, caller ID and call waiting features. She also played an instrumental role in developing sensitive solar cells and fiber optic cables for speedy data communication.

## GUI GURU

Susan Kare, a graphical designer and artist, didn't invent anything as such, but she played an important role in ensuring people using early computers weren't intimidated by the tech inside them. How? By designing a great, easy-to-understand, iconic graphical user interface.

Kare was the designer who worked with Steve Jobs, bringing her sophisticated typography and iconic graphic design skills to Apple Inc. Many of the now-common interface elements of the Mac, such as the command icon, are all credited to Susan Kare, which she apparently found while looking through a book of symbols.

If Apple's where Kare earned her initial fame and reputation, her diverse work with other technology companies at the time helped her leave a lasting impact on how people perceived them. After Jobs was forced out, Kare left Apple to work with Microsoft, where she applied her design skills to the Windows 3.0 OS, creating quite a few of its iconic graphical elements. Remember the card deck of Solitaire? Yup, that's her work. Kare was also the Creative Director of NeXT for a while.

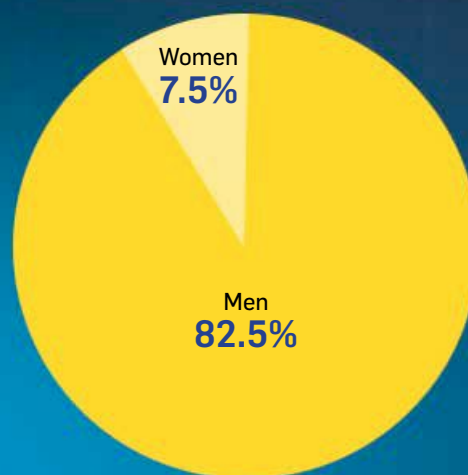
She has also worked on Facebook's "digital gifts," including the friendly rubber ducky found on the popular social network.

## FROM OLPC TO VR

Dr. Mary Lou Jepsen is a technology maverick in every imaginable aspect. Her efforts across various technology verticals and companies have strived towards making a big difference on not only how technology is consumed, but also on removing barriers to access of technology.

For example, in 2005, with Nicholas Negroponte, she co-founded 'One Laptop per Child' ('OLPC') to build \$100 computers for the majority of the developing world, ensuring poor children get access to affordable computers that they can use and play with. As Chief Technology Officer she not only invented, but also

## GENDER AND PATENTING



This chart shows the percentage of men and women receiving patents in the US. **While women receive only 7.5% of all patents, only 5.5% are commercialized patents, the most lucrative type.** The most important factor contributing to this patent gender gap is men's overrepresentation in patent-intensive fields such as electrical and mechanical engineering.

Patent inequality in the USA

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# TO INFINITY AND BEYOND!

Pioneering women haven't just shone a bright light in computing or information technology alone. Take a look at the following inventions, all of which come down to the efforts of enterprising females



**Windshield wiper** – Not many people know this, but the first effective working model of the modern day car windshield wiper was made by Mary Anderson, when she was driving to New York City on a frosty day and noticed other motorists struggling to drive with the snow falling on their windshields. She received a patent for her invention in 1903.

**Electric Refrigerator** – If it weren't for Florence Parpart's invention, the electric fridge, we'd still need to wait for our daily delivery of ice to preserve household food items, because that's how refrigerators used to work till about 1914 – when Parpart had her eureka moment. Thanks to her invention, billions of tonnes of food are preserved and prevented from wastage in households around the world.



**Kevlar** – A whole new world of rich polymer chemistry would've been hidden away from us, but for the efforts of Stephanie Kwolek, a scientist and chemist. While working for DuPont, in 1964, Kwolek invented 'Kevlar'

– a polymer that's five times stronger than steel by weight. Kevlar is used to build aeroplanes, sports equipment, boats and, of course, bulletproof vests.



**CCTV** – Unmanned, device-only constant surveillance solutions are a dime a dozen now. However, back in 1966, the concept was unimaginable. Growing up in New York City, Marie Van Brittan Brown dreamt the impossible and devised a solution that allowed her to attach a camera to a pole and view its feed on a monitor display. Not only this, her CCTV invention also allowed

for authorised personnel to open a security door with the click of a remote controller.

**Browser for Blind** – Chieko Asakawa holds the distinction for creating many pathbreaking solutions for the blind or vision-impaired to facilitate their access to technology. In 1997, her work on the groundbreaking voice browser – 'IBM Home Page Reader', which was made available in the U.S., Europe and Asia – opened up the Web and its information resources to the blind. Its interface technology has been widely adopted by other voice browsers.



Susan Kare is credited for Solitaire's UI

delivered an inexpensive, high-volume production computer that many technology titans at the time thought was an impossible dream.


Dr. Jepsen then went on to found 'Pixel Qi Corp.' in 2008, with a vision to trans-

form the display industry by building a revolutionary new display that performed incredibly well while viewing its content under direct sunlight – a feat that many modern displays still grapple to overcome. In the past, she's been a professor at MIT, the CTO of Intel's Display Division and, most recently, been involved with Google X as the Head of its Display Division, directing display and consumer electronic programs throughout Google.

Dr. Jepsen's current challenge? As executive at Facebook/ Oculus VR, she is leading a concerted effort to bring Virtual Reality to the next level. With her extensive background in display technology pioneering, we have no doubt she'll play



Thank Dr. Jepsen for One laptop per child

a crucial role in ensuring VR reaches unprecedented heights in the coming months. Time Magazine inducted her into its "Time 100" as one of the 100 most influential people in the world, and who would argue with that? 



# CONQUERING CHALLENGES!

**WE NEED MORE WOMEN IN TECH. OF THAT THERE'S NO DOUBT. PROMINENT TECHIE WOMEN – SPANNING FROM THE BIGGEST TECH COMPANIES TO PROMISING TECH STARTUPS – WE DISCUSS HOW THAT CAN BE ACHIEVED AS WE TALK TO PROMINENT LEADERS IN THE FIELD OF TECHNOLOGY.**

BY JAYESH SHINDE

**T**echnology hasn't been touched by pioneering women in the past alone. Modern day female role models continue to inspire all of us (not just girls) to break barriers, reach for the stars, push the frontiers of technology and boundaries of the status quo further than ever before. By doing this, not only are they empowering themselves but a whole generation of Indians who are waiting in the wings. And possibly many more people around the world.

When it comes to girls or women techies, we don't have enough of them to begin with, and more's the pity. Google claims that less than one per cent of girls study Computer Science in the US. According to the search giant, girls start out with a love for science and technology

up until middle school (74 per cent), before losing it somewhere along the way. By college, only 0.3 per cent girls actually plan to study Computer Science. This is a huge cause for concern, especially because jobs in Computer Science are slated to pay substantially more than the average. Encouragement from adults and peers is the number one contributor to a girl's decision to pursue academics and a career in Computer Science. As a result of all this, technology and humanity at large is suffering and held back from a faster rate of overall progress.

If America's struggling with the problem of underrepresentation of women in technology, it's safe to assume that we too have a lot of work to do to empower women here in India.

We spoke to a number of women leaders and role models from India – all of whom are geeks and techies in their own right – to get a sense of the awareness levels among the masses when it comes to women's contribution in technology, how to get more girls into tech-related careers, and other relevant questions.

## WOMEN TECH, IS IT POPULAR?

As far as awareness levels go, we wanted to understand what senior women technology executives in technology companies thought of the awareness levels among the masses regarding the role played by women in furthering technological advances.

"Women are making a mark in every industry today irrespective of which field

they choose to enter. The important thing to note is that the lines are blurring and it's an exciting time to be a woman, especially in technology," said Genius Wong, Senior Vice President, Global Network Services and Cloud Enablement, Tata Communications. "For example, At Tata Communications, I am one of the three women on the leadership team, our CFO and CMO are both women who come from the technology industry."

She recognises that gender gap is a challenge in the tech business – women make up only 16 percent of tech jobs globally, according to her. However, Wong believes this can change with organisations such as 'Girls who Code' that work towards closing the gender gap in technology and inspiring girls to pursue computer science by exposing them to real life and on screen role models.

Shweta Aprameya, COO, Airtel M-Commerce Services Limited, says that consumers are more linked to the end state unless there is an emotional connect attached. She further adds, "Speaking



“I would say that it takes a while for a customer to be convinced that a woman can understand and solve technical issues; hence one encounters a lack of confidence initially. It takes both time and effort to build credibility for a woman in technology.”

**KV SUDHA**  
EXECUTIVE DIRECTOR  
SYSTEMS MANAGEMENT ENGINEERING  
DELL INDIA

of society at large, I believe there is an increasing awareness that women are the driving force in every field. We have Arundhati Bhattacharya, who heads one of the largest banking institutions. Biotechnology has women like Kiran Majumdar Shaw – a widely acknowledged personality. Google, in its recent diversity report, mentioned that 21 per cent of tech hires last year were women, boosting the overall number of women in technical roles by 1 per cent. This is a clear indication of a paradigm shift enabling higher participation of women in technology companies.”

According to NASSCOM, a trade association for Indian software and services companies, the tide's turning slowly but surely as women entrepreneurs have started to advance a foothold in the startup industry and have begun to make their presence felt. Sangeeta Gupta, Sr Vice President, NASSCOM further adds, "To enhance women's representation in the IT-BPM industry, NASSCOM has been working with the industry to help more women to build successful ventures. As part of our '10,000 startups' initiative, we initiated 'Womentechship' in support with major players in the ecosystem that helps promote and grow entrepreneurial and

innovative women in the tech space. The important thing to do is to create a robust startup and investment ecosystem for women. Hence, as part of these programs we have been organizing various industry connect programs, Hackathons, meetups and tech-talks, where women entrepreneurs can meet women leaders to discuss and share insights on a regular basis”.

### GETTING MORE WOMEN INTO TECH

To ensure more women become technologists, Barbara Belpaire, General Manager, TomTom (India), believes it all starts with giving girls access to technology, social media and innovation at home and in school to spark their interest in the technology domain.

“Traditionally in India, girls did not always get the same chances as boys and this should be addressed. Parents need to ensure good education for their daughters and allow them to make career choices for themselves in line with their interests and talents,” Barbara stresses. “Girls should



“The role of women in both technology creation and its adoption is increasing by the day. Women constitute about 34% of India's tech industry today. Product planning and development are benefiting from these increasingly diverse insights. Additionally, the use of technology by women is growing rapidly across the world. Data suggests that women are the bigger decision makers in procuring technology today: women buy 65% and influence 89% of all consumer electronics purchases.”

“I have derived my biggest professional satisfaction from building technology systems that deliver real-world value to the customer. In my first 10 years, I worked on building fraud detection systems for credit cards, healthcare and insurance. These systems helped to detect different fraud patterns in real time. They also helped to detect crooked healthcare providers, who in some cases, were providing unnecessary services to patients. In my current role, I'm helping to build new features for the Indian consumer by partnering with local Indian sellers, thus not only helping the end-customer, but also taking technology to the local sellers and providing new services for them.”

**ARATI DEO**  
SR MANAGER  
MACHINE LEARNING & SOFTWARE  
DEVELOPMENT, AMAZON.COM

**KUMUD SRINIVASAN**  
PRESIDENT, INTEL INDIA

# BREAKING BARRIERS

- **Girls for Change:** When it comes to inspirational stories, here's one that would put a smile on your face. Located in Mumbai's and Asia's largest slum, Dharavi, there's a group of 13-15 year old girls who are beating the odds and making a difference. Girls for Change, part of Dharavi Diary, is led by documentary filmmaker Nawneet Ranjan, who works with Dharavi girls to help them create apps using the MIT App Inventor to address issues in their community – women's safety, water supply and girls' education. One of their apps, "Women Fight Back", is now in the Google Play Store – check it out for yourself. With Nawneet's efforts and guidance, the group of 30-35 young girls from Dharavi are learning to create apps and take part in the International Technovation Challenge.

[www.dharavidiaary.com](http://www.dharavidiaary.com)

- **Women Who Code:** Based in Bangalore, WWC is an organization dedicated to educating and inspiring women in technology. This novel effort enjoys close to 500 members since it was founded in late 2011. Functioning under the direction of Devangana Khokhar, Women Who Code are known for their free weekly technical study groups and larger format monthly events including tech talks, hack nights, and career trainings – all meant for deserving girl

students or young professionals who are trying to learn essential technical skills.

[www.womenwhocode.com/bangalore](http://www.womenwhocode.com/bangalore)

- **WeTech:** Their Afterschool program was launched last year, and the innovative program connects industry professionals from Qualcomm, Goldman Sachs, and Target with teams of middle school and high school girls in India and San Diego to serve as mentors and guide them through the 12-week Technovation curriculum. After the successful mentorship, the teams pitch their apps to a panel of industry professionals from leading tech companies such as Google, Intel and SAP. The top three teams receive prizes, but every young woman that participates walks away with the technical skills needed to develop an app, the confidence to present their ideas and the support of a mentor. <http://dgit.in/1ETUqkU>
- **Sheroes:** This is a jobs and careers community for women in India, committed to enhancing the quality and quantity of opportunities for women and investing in women professionals through various phases of their career. These include opportunities with women friendly employers, flex friendly formats, mompreneur programs, partnership programs and more. <http://sheroes.in>

be stimulated at school and at home to be vocal, to share their thoughts and ideas and to collaborate. More and more female graduates join companies but the companies experience drop-outs when they marry or give birth.

To tackle this situation, employers need to create a safe, respectful women-friendly environment by ensuring diversity & inclusion at workplace, zero-tolerance against gender-bias, stimulating women to grow further into their career and to take up additional challenges, providing mentorship and creating a good work/family/personal life balance to attract more women to become technologists."

To add to that, Aparna Khatri, Senior Director, Global Solutions Engineering, EMC, believes that for aspiring girls to become technologists, they require to be skilled and intelligent. "So the first step is to ensure that girls get the required education, both foundational and advanced. The trend has definitely improved over the last 20 years with the government and private sector's focus on education as well as people's understanding that technology is an area where women can grow and excel in their career. From 1-2 girls in a class of 60 pursuing engineering/diploma, the number has grown to 30 per cent.

## What challenges have you faced as a woman employee in the field of technology?

 I started as a Manager in Accenture in 2003 and am now responsible for all technology delivery from Accenture India Delivery Center for our Resources clients (oil and gas, utilities, chemicals, and natural resources) for the EALA (Europe, Africa and Latin America) region.

In the earlier years, the biggest challenge was being able to relate to the wide diaspora of our teams in terms of background, age, and experience and 'carry each one along', win their 'buy in'. In the later years, the challenges involved getting the right skill set for the job, staying relevant to the client, and organization changes.

**SHALU CHADHA**  
MANAGING DIRECTOR  
ACCENTURE INDIA DELIVERY CENTER FOR  
RESOURCES CLIENTS

Most tech companies have realized the advantage of a diverse workforce, and encourage recruitment of women employees and also provide the required flexibility during major life events including marriage and childbirth. Women should leverage this support and with enough drive, perseverance and hard work can definitely excel in the tech industry."

Pallavi Gupta, a Software Engineer working for Samsung R&D Institute, Bangalore in the Voice Recognition team, Mobile Division, feels that we don't see a lot of women entrepreneurs or leaders talking to the public about technological advance, barring a few. "For instance ISRO women scientists' who were seen celebrating during the successful launch of MoM, is something the nation reverberates with. There is a lack of emphasis on the achievements made by the women technologists and hence the consumers aren't quite aware of the same," according to her.

And if it all checks out, it's only a matter of time before we have more success stories like that of Manu Malhotra, Senior Manager, Engineering Software, HARMAN Connected Car. A techie at heart, she's been associated with innovative engineering work all throughout her career. "I am proud to be associated with



# WOMEN STARTUPS

CHECK OUT THESE INTERESTING WOMEN AND THEIR TECH-PROPELLED STARTUP EFFORTS

## 1 SEEKSHERPA

At 24, Sukhmani Singh decided to #BreakTheRoutine and co-founded SeekSherpa, a platform that connects locals and travelers over city-immersive tours & experiences. A NASSCOM 10K and Venture Nursery incubated startup, she worked with travel and tech industry leaders in creating this mobile first business. Previously, Sukhmani worked with AT Kearney on strategy projects in the Communications, Media, Digital and High Tech space across the APAC region. She's a travel enthusiast and a culture vulture, a keen photographer, a trained classical dancer, an advanced scuba diver and a self-proclaimed design thinker!

safety, security, hygiene, and instructor quality, criteria that are important to parents when selecting a class.

## 3 LOGINEXT SOLUTIONS

Manisha Raisinghani possesses over 8 years of design and development experience in big-data analytics and optimization and currently heading the product and technology at LogiNext. She has led workforces at IBM in the US and has advised global corporate clients on their technology issues for e-commerce and logistics. She holds a postgraduate degree in Information Systems Management from Carnegie Mellon University.

## 2 FINDURCLASS

Rina Nathani is the founder and CEO of FindUrClass.com, a leading online search and discovery platform that helps parents find the right activity or hobby class for their kids. Carving a niche for itself, FindUrClass caters only to classes that go beyond academics or are co-curricular in nature, what Rina likes to call "Personal Interest Education". With the mission of being a trusted informational resource for parents, the company not only aggregates good educators hyper-locally, but also curates them for

## 4 SAFECITY

Devised by ElsaMarie DSilva, from Mumbai, Safecity is a platform that documents personal stories of sexual harassment and abuse in public spaces. This data, which may be anonymous, gets aggregated as hot spots on a map indicating trends at a local level. The idea is to make this data useful for individuals, local communities and local administration. Since their launch on 26 Dec 2012 we have collected over 5500 stories from over 50 cities in India and Nepal.

products which have in the past been associated with more technologically advanced countries," says Manu, before adding, "Creating solutions which are totally home grown and developed from scratch, gives me immense pride. Technology in India is always thought to be a "follower" of other technological innovations, and busting this myth to create products from scratch which can be used across the continents is one of my greatest achievements. I have worked on products (from concept to reality) which were initially designed for developing markets but ended up getting adopted first in developed markets. This is called 'disruptive innovation' and it has helped us venture into new markets while also making our presence felt in India."

## ARISE WOMEN, TECH NEEDS YOU!

Before we end this story, we'd like to leave you with words of encouragement, especially to all of you girl readers out there. Who better to inspire you than women techies who've carved a successful niche for themselves in technology?

## If you were a superhero fuelled by technology, how would you fix India's problems?


“I see technology as the key tool to solve most of India's problems. Be it basic needs for increasing crop yield to satisfy the population's demand for food or working for solutions towards providing safe, clean water.

In core sectors fundamental to development like Education, Healthcare and Energy, innovation and technology can work wonders.

So If I become a Superhero, I will create more Superheroes to join me to resolve our fundamental problems that impede human development. It takes not a superhero act, but a thought-through technology revolution to transform societies and human lives.

**KALYANI SEKAR**  
SENIOR DELIVERY HEAD, VERIZON

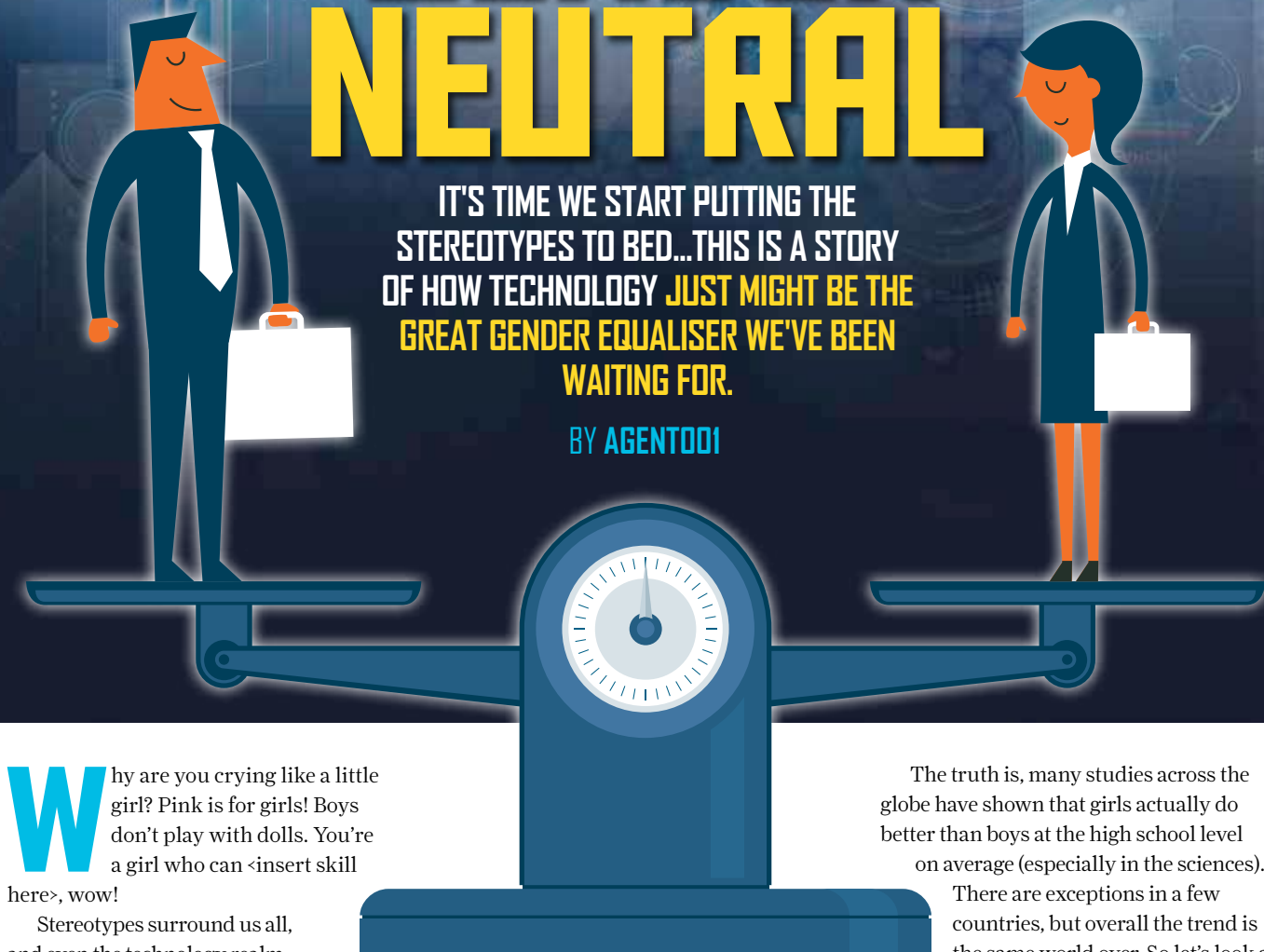
Megha Bhagat, from Bangalore, consults with non-profits in the education, social entrepreneurship and women in technology sector, typically spending her time creating opportunities for young girls and women in universities to get the right exposure to upcoming technology and coding. She says, "As a woman we have an incredible ability to be empathetic about problems around us and therefore remember to remain persistent with choices you make with technology studies. Technology is impacting our lives in more ways than we know and thus it's critical to become a part of the movement so that we create the solutions that we deserve."

As a seasoned HR veteran, Dr. Kiranmai Dutt Pendyala, Corporate Vice President - HR, Greater Asia and EMEA, AMD, has assessed and hired thousands of aspiring techies in her professional life. She believes that, "Technology is an enabler, do not hesitate, believe in your spirit, believe in yourself, go reach out - sky is also not the limit. Technology beckons you, take bold strides forward to design the products of tomorrow." 

# GENDER NEUTRAL

IT'S TIME WE START PUTTING THE  
STEREOTYPES TO BED...THIS IS A STORY  
OF HOW TECHNOLOGY **JUST MIGHT BE THE**  
**GREAT GENDER EQUALISER WE'VE BEEN**  
**WAITING FOR.**

BY AGENT001



**W**hy are you crying like a little girl? Pink is for girls! Boys don't play with dolls. You're a girl who can <insert skill here>, wow!

Stereotypes surround us all, and even the technology realm isn't spared either. Actually, the technology world perhaps started out as a male-dominated domain due to mostly societal factors, but many decades of gender parity later, this bias promises to even out in time. Why? Because these days you can throw a rock in a city's business district, and you're likely to hit a person employed in a technology role. It's simple, technology is all encompassing by nature, and that's a good thing for gender equality. And we mean equality for both genders (masculine and feminine) and sex (male or female) here.

The wonderful thing about technology is that it's all just 1s and 0s ultimately. It will output the same result for a given question, no matter what type of genitals you have. Or so I hope!

Recently, there's been talk of trying to humanise technology. For example, personal assistants are being introduced, because apparently we prefer a person to a search box or a robot. Many will question why most of the personal assistants are female, and call that sexist. Are all the users of technology men? Why not a male voice? I'm not so butthurt about that though – for one thing, I assume most men and women would rather talk to a woman. Almost every modern adult man is used to being told what to do by a woman, or at least asking her for permission, and men are terrible at giving and asking for directions! (I jest, so hold off on the hate mail, for now.)

The truth is, many studies across the globe have shown that girls actually do better than boys at the high school level on average (especially in the sciences).

There are exceptions in a few countries, but overall the trend is the same world over. So let's look at aspects of tech that I think will end the great gender divide, or are at least steps in the right direction.

## THE FREELANCER

The word "freelance" basically stems from ancient times, meaning a fighter who would work for money. Or a mercenary in other words. Very obviously male, and very macho. In those days, if you were a "free lance" you were definitely a man. Today, according to data from elance.com, if you're a freelancer in technology, you're more likely to be a woman! Oh how the tables have turned!

The obvious benefit of freelancing is that women who have chosen to put their careers on hold while being mothers can



Sixty percent of freelancers are women

still partake in the economy. Outsourcers get highly skilled personnel for a fraction of the cost, while homemakers can make money on the side without compromising on family time. Plus, women seem to prefer the diversity of work, so they're not bored. Overall, this is one field that I feel will be female dominated.

### THE CELL PHONE

What started as a simple communication device has now, in all honesty, become the new PC. Computing has never been more personal than on a cell phone, and the focus has shifted from creating to using. The chauvinists amongst us will be sniggering right about now, and whispering "selfies" and "Candy Crush" under their breaths.

However, I think cell phones have exposed a large part of humanity to technology, and opened their minds to trying it out. It's also resulted in the next generation being exposed to it a lot sooner. Boy or girl, doesn't matter, they all want to play with their parents' phones. That's how it starts, and then a whole generation of people are used to being aided by technology, and they seek even more of the same.

Then there's the access to the internet pie, which is again skewed towards men. This is also ending soon, hopefully, as more and more services go online and as mobiles take over as the primary device for accessing the internet.

### LET'S PUT A PIN IN THAT!

The problem with a totalitarian equality is that it assumes all things are equal, but all things aren't. There are some fundamental differences between men and women, and this is especially true in the case of reproduction. Men just have a slower biological clock (in general) when it comes to being able to create an offspring. Every human deserves the right to become a parent, however, the clock ticks faster for women. This

means that men can focus more single-mindedly on careers, but women have to start worrying about whether they're getting too old to become mothers.

Large corporates such as Facebook and Apple offer to foot the bill for women who want to have their eggs frozen. This at least allows some women to focus on their careers. Perhaps the day will come when all babies are grown in test tubes, and are born to 40-year old parents, raised by robot nannies, with both parents taking equal time off from their jobs... until then, this is a pretty decent halfway measure.

### BROADBAND

Assuming that the internet penetration across the globe keeps increasing, the internet is going to be the greatest leveller of them all. Why? Because the internet doesn't care whether you are male or female.

Well, OK, that's a lie, because advertisers care a great deal, so that they can market multicoloured phone covers to a woman, and primary coloured phones to men. They pay good money to know your gender, which is one of the main reasons why Facebook is worth as much as it is!

What I meant was that the information on the internet is available to all. It's there for everyone to use regardless of gender. If you're looking for ways to learn how to code, or take up baking a cake, no one's going to judge you. This, I hope, will finally end the whole gender differences once and for all.

<rant>The only problem is, internet penetration is increasing, but not equally for both genders, sadly. There are still too many countries where people believe that the net is bad. As if it's a living breathing entity enticing people to sin. In many patriarchal societies, women aren't allowed access to phones and devices, let

alone internet access. We live in one such country, sadly, where we blame everything else but our patriarchal and bigoted mind-sets.</rant>


### UX DESIGN

This is an area where we need to see many more women. For one thing, at least half of all buyers out there are women, and they usually spend more than men. If you're selling products online, chances are you need to design more for female shoppers than male. Yes, that's sexist, but the fact is that women are usually left handling home affairs. There are many more things bought for the home, and on a much more regular basis than, say, phones or gadgets that men traditionally show interest in. Shopping malls are designed with women in mind, especially the grocery and household item sections.

UX design almost comes naturally to those who are more intuitive, are willing to listen to others, are able to multi-task, separate words from emotions (of the people being researched) and able to express themselves clearly... sounds like the perfect job for women!

### EVERYTHING ELSE!

Everything you've read up until now is just a load of bull droppings. Honest. I was just cherry picking random stuff from technology to try and make points about why they're good avenues for women to pursue. Absolutely anything in technology, or even otherwise, can be analysed like this. You can choose to see the glass half-full or half-empty, or consider something to be a male bastion, or not, it's really merely a way of looking at things. The fact of the matter is, your sex, gender, or even sexuality (which sex you're attracted to) means absolutely nothing when it comes to what you're capable of learning or achieving.

The future, as I see it, is set already. Technology will expose more and more generations of humanity to information, which will in turn allow them to understand what you and I already know. All this nonsense of what men should and shouldn't do, or what women can and cannot do will soon be moot, hopefully. Maybe someday the first question about a brand new life will not be: "Is it a boy or a girl?" but instead be: "Are you hoping it will grow up to be a programmer or a UX designer?" Wouldn't that be nice? 



Robot nannies for career women



# worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

## (MUST READS)



### WEARABLES WILL GET MORE 'EMOTIONAL'?

With every other company launching a new wearable device and/or coming up with better versions every other month. It won't be long before these biometric sensors start measuring emotions as well.

<http://dgit.in/emotionalnet>

### WHY RUSSIA BACKED OUT OF THE RACE TO MARS

Ever wondered why Russia didn't bother with sending a lander to Mars? That too after engaging in a competitive space race for decades with the United States. The Viking 1 pretty much nailed it for the USA.

<http://dgit.in/NotSoRedRussia>

### LIFE EVENT: JUST DIED.

Ever wondered what happens to your facebook profiles when you die? Who has the access to all the personal information, your interests and everything you had ever shared? Here's what Facebook did to a profile that came back from the dead.

<http://dgit.in/ripfbprofile>

### COME ON, WHO READS 'EM ANYWAY?

You'd wonder whether Terms and Conditions, EULA's etc. were always worded so as to make it difficult to for us to go through. Turns out that it just might be the case. Conditions and clauses that are 2000 words to 20000 words long are commonplace. Let's shed some light on this:

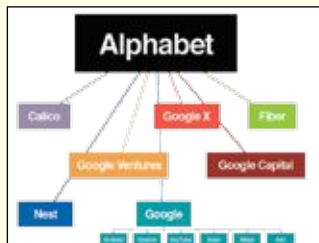
<http://dgit.in/iaccepteula>

## [VICE Corner]

### ASHLEY MADISON HACK 'IMPACT'



The online dating service for enabling affairs – Ashley Madison was recently revealed to have been hacked and the hackers responsible for it have some interesting reasons to justify why they did it. <http://dgit.in/impctmail>



#### Alphabet now owns Google

CEO Larry Page recently announced the creation of a new company named Alphabet as part of a much larger restructuring process. The move will mean that Google and will not be at the mercy of investors as it used to be. And Sundar Pichai will be the new CEO. <http://dgit.in/alphaggl>



#### Internet of brains, the next big thing?

A Researcher has taken the Internet of Things one step further to create a 'Brainet', a network created by connecting the brains of four rats. This allows them to perform computational tasks that they otherwise could not have accomplished individually. <http://dgit.in/intofbrains>



#### Did he just 'fake' a kickstarter?

Several kickstarters are started everyday but there are ridiculous ones that simply don't seem will take off. That's when the Federal trade Commission unleashes itself and calls it an fake or illegal project. Read the entire story here: <http://dgit.in/ilglkckstrt>

**IOT INCREASING  
SECURITY ISSUES?**

The Internet of Things is here and it raises with huge concerns.

So what's being done to mitigate these security risks? Especially when design and utility are prioritised over security. It's a worrying trend that should have been.

<http://dgit.in/secureiot>

**LET'S DISCOVER MORE!**

Snapchat hired James Veraldi, as their new media executive to enhance its Discover tab. Discover has had content partners like Vice, BuzzFeed, People etc. This new change should help Snapchat increase their userbase significantly. Read more on the entire list of changes here: <http://dgit.in/discoverjames>

**USE CLOUD AS DEFAULT  
STORAGE**

Cloud storage is a great way to access your files from anywhere and with greater Internet penetration this might soon make memory cards a thing of the past. Here's a simple tutorial to help you set the default storage on your phone to the cloud. <http://dgit.in/defaultcloudstrg>

**SENSOR FILLED 'SMART  
SHIRT'**

Ralph Lauren's sensor loaded shirts are coming to the market. These Polo Tech Shirts come with various sensors that can measure steps, heart rate, breathing and exertion depths. Read more about this amalgamation of fashion and technology. <http://dgit.in/sensorpolo>

# A week with the Apple Watch, in India

Maybe you deserve it, but do you need it?

– By Souvik Das

Well, we know how Apple products are. Impeccable build, with a suave finish that subtly highlights its technological advancement. The Apple Watch is in every way a device that highlights Apple's philosophy. It makes heads turn, people admire it. It is quite interesting to see the amount of technology Apple has packed into the tiny device.

We took the Apple Watch around our daily schedule, and through a weekend of club-hopping, to see how much does one actually need it. After all, sitting here in India, if you are spending nearly 40 grand on a device, you would possibly be looking for one you need, and not what you merely deserve.

In the first few days, I felt a certain kind of happiness when you wake up and touch the Apple Watch's dial. It lights up, and if you happen to have the solar curve watch face on, you will see that the sun has, indeed, risen. I switched off the alarm, and headed for work, attending a couple of calls and responding to a number of messages on my way with the Watch. I was perfectly capable of doing the same with my phone, but seeing that I had the Watch, why would I?



Setting up the Activity app on the Watch, I was notified that I should exercise for 30 mins and stand for a mean time of twelve hours through my day, to burn approximately 650 calories. My heart was beating at a steady 74 bpm, and I had enough reason to believe that all was well. After all, I could simply flick up my wrist to see when my cab would arrive, and do a quick check on Maps to see how bad the peak hour traffic was.

I was also updated that my music streaming service had new music albums for me, and I also had a number of updates from my friends on Facebook, Instagram and WeChat. I could see all of these on the Watch itself, and survived six hours straight, without taking my phone out of my pocket even once. The Retina display is really nice to look at - colours are rich, the display is uber-responsive, and the multi-layered touch controls add functionalities based on varying degrees of touch pressure.

The camera control on the Apple Watch mirrors the camera on the phone. This has multiple uses - you can use it as a neat

sting operation tool. It does not, however, have video controls. You have, basically, almost all of your phone's control on your wrist. The feedback tap of Apple's Force Touch display gives powerful responses which make your watch feel alive. Combined with the smooth, flowing animations, a large number of supported apps and not having to take my phone out over and over, the Apple Watch was all about the admiration it deserves and the happiness it emanates.

## Days Four to Seven: Disenchantment and Goodbye

But here's the catch - I had already charged my Apple Watch three times in four days. In fact, it ran out faster than my iPhone on the fourth day. It was during these five hours when the Watch was switched off, that I realised how life is not exactly difficult without it. I was completely used to holding the phone up to my ears, and when I didn't want to, I've always had handsfree to fall back upon.

I've used a number of apps more frequently in my days with the Apple Watch - WeChat, Instagram and Flipboard. With WeChat, a sharp vibration tap notifies you



**YOU HAVE A NOTIFICATION!**

Notifications are probably the reason why we check our phones so many times in a day. Here is a detailed study of all the notifications the sample set received in a day. Can you guess which kind ends up being the most annoying of the lot?  
<http://dgit.in/24hrnotify>

**NEW FOOD PHOTOGRAPHY APP BY GOOGLE?**

After shutting down Tablescope, Google's app for photographing food, quite a lot of users were disappointed but not for long. Turns out Google Maps and the Camera App are being tied together to bring back some of Tablescope's features.  
<http://dgit.in/gglfoodapp>

**NOW TRANSLATE DIRECTLY ON YOUR ANDROID WEAR**

Now with Google translate accessible on Android Wear, you can translate languages on the go! The new feature is designed to enable conversation without having to fuss around with your phone. You finally won't have to lug a dictionary around with you on your trips.  
<http://dgit.in/trnslteonwear>

**YES, DESKTOPS CAN LAST UPTO A DECADE**

Being up to date has always been interesting but sometimes, sticking with the trusty old desktop is just fine. If you've just bought a desktop and want it to last for a decade, you should definitely check this article:  
<http://dgit.in/dsktp4decade>

of an incoming message, and also shows up on the drop-down notification menu. Tapping on it opens the message, and shows all the chat profiles that you have used recently. You can reply to the messages with one of the preset texts or a voice message. Apple has worked on its voice recognition capabilities, and it does pick up Indian accents in a crowded environment better than it used to. You can also respond via stickers that are available.

Instagram shows you the news feed, and your recent activity. You can view all the photos from accounts that you follow, and like them. You can also respond to your latest follow requests, and see who commented on and liked your posts. But, somehow, you cannot post a comment via the Watch. Flipboard is, in fact, one of the apps which works almost to its fullest features on the Apple Watch. You get the curated news feed based on topics and users you follow. You can flip stories into



it does is practically mirror your iPhone, and nothing more. It adds a touch of suave, no one can deny Apple's prowess when it comes to designing devices with an artistic finesse. But, functionality? You will need your phone anyway to fully utilise the Watch's capabilities. The point of having an additional device to do the same things that your phone does best, is only adding extra liability of charging it every day, at a pretty hefty retail price.

**Here's how it ended**

After a week with the Apple Watch, here's what I felt. The Apple Watch is a really good-looking wearable gadget with every finesse that a conventional wristwatch may carry, just like the Moto 360 or Asus Zenwatch, which are well made, but offer no really practical functionality either. As a gadget, it is indeed a nice foray into the future of shrinking gadget sizes, and powerful watch-sized devices capable of doing everything a smartphone can do now. But it is not a device that the money-conscious Indian buyer would really want, not unless you are an Apple fan with plenty of money.



one of your public or private magazines, or choose to put them into the 'read later' list. You cannot, however, read the full story on the Apple Watch. You will be shown the introductory paragraph of the story, followed by a message, "Read full story on your iPhone".

It is at this point that you begin to feel that the Apple Watch is exaggerated luxury. What

All the applications work like a preview of what the full version would look like on the phone. The fitness activities are not sharply accurate, and if you are a fitness freak, you would rather go for a much cheaper and more durable Fitbit device. At



\$599, it is quite evident why Apple decided to not bring the Apple Watch to India, now. We are not ready for a device that costs upwards of ₹35,000, and doesn't really do anything more than your phone at all. Basically, what I'm saying, if I'm saying anything, is this.

<http://dgit.in/weekwthiwtch>



## IT'S OKAY TO BE SMART

Created by Joe Hanson, a guy with a Ph.D. in Biology, this channel joins the likes of ASAP-Science, V Sauce and the



many other YouTube channels that tackle questions pertaining to the world of science.

<http://dgit.in/OkayToBeSmart>



To get all these links in one easy to read page, make sure you blip these pages from your smartphone.

## (PRODUCT LAUNCHES)

### SAMSUNG GALAXY S6 EDGE+



Samsung recently launched an updated version of its Galaxy S6 Edge phone, the Galaxy S6 Edge Plus. It has a slightly bigger screen and has 1 GB more RAM than the S6 Edge.

Price: N.A.

### NVIDIA GTX 950



NVIDIA's latest budget segment graphics card, the GTX 950 is based on the same GM206 GPU as the GTX 960. It might have a few CUDA lesser but sports a lot more VRAM with 2 GB.

Price: ₹14,450.

### LG G PAD II 10.1



Sporting a resolution of 1920x1200 and running Android 5.1.1, the LG G PAD II is powered by a 2.26 GHz Quad-Core Snapdragon 800 SoC and has a 7400mAh battery to go with it.

Price: N.A.

## PICTURE PUZZLE



ABSOLUTE  
TIMEPASS

## UNJUMBLE ON YOUR MOBILE



DOWNLOAD  
BLIPPAR APP

FILL SCREEN  
WITH IMAGE

BLIPP IMAGE  
INTO LIFE!

## Top 3 YouTube Picks

Make sure your boss doesn't catch you goofing off with one of these videos playing on your screen



### On the "Perfect Smartphone"

Duration: 4 min 58 seconds

MKBHD lists out all the features that he'd want included in the 'Perfect Smartphone'. And we couldn't agree more.

<http://dgit.in/mkbhdperfph>



### 3D-glass printing

Duration: 1 min 11 seconds

An MIT group built a 3D printer that extrudes glass. The technology could lead to cheaper fibre optic cables.

<http://dgit.in/3dglassprnt>



### Last Week Tonight-Televangelists

Duration: 1 min 41 seconds

We simply couldn't skip this one. John Oliver hits another home run with this one. Plus, he is now a minister.

<http://dgit.in/JohnOliverTE>



We have a heart-to-heart with Sanket Atal, VP, Product Development, Oracle India, about Oracle's future roadmap.

# What's new with Bootstrap 4

>> One of the most popular frameworks has some exciting upgrades in store >

**B**ootstrap turned four years old last month and with that, version 4 alpha was announced. Let's take a gander at all that's new.

Bootstrap's moved from Less to Sass (Syntactically Awesome StyleSheets) as its source. As a result of this move, compile time for Bootstrap has reduced considerably. The grid system has been completely overhauled to afford greater flexibility on mobile devices. Flexbox grid support is finally here. You can easily switch boolean variables and take advantage of the new system and its components.

Say goodbye wells, thumbnails and panels; cards are better! With version 4, Bootstrap has introduced cards which do everything that well, thumbnails and panels did, except better.

No more IE8 support. Forget about using px in your CSS, it's time to start using rem and em which are better for responsive typography and makes resizing components easier.

JS plugins overhauled. Each javascript plugin has been rewritten to suit ECMAScript6 standards which brings UMD support, option type checking and more features.

Improved tooltips placement. Thanks to tether, which is a positioning engine, tooltips will now be auto-positioned in a more efficient manner.



## Bootstrap 3 isn't going to die soon.

Unlike what they did with Bootstrap 2.x when 3 was launched (they killed it), we will continue to see critical bug fixes being rolled out on a regular basis for Bootstrap 3 well after 4 has been released.

## Official Bootstrap Themes

After having fiddled around with the idea of coming up with official themes ever since Bootstrap version one was announced, they've finally got around to launching an official store. There were three themes at the time of writing this and each costs a whopping \$99.

Check it out here: <http://dgit.in/BootstrapThemes> >

## \*Open Source



### 50 years of hypertext

>> It has been 50 years since Ted Nelson coined the term 'hypertext' and included it in his first draft on the topic.

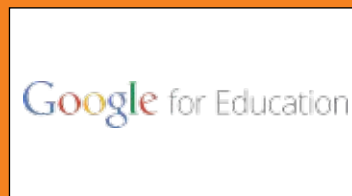
<http://dgit.in/Hyptrxt50>



### Your first language

>> If you've been bewildered by all the programming languages and aren't sure which one to pick, here's an infographic to help you out.

<http://dgit.in/1stProgLang>



### Google resources portal

>> Google has released a portal full of resources to learn computer science, under their Google For Education division.

<http://dgit.in/GooglePortal>

# A beginner's guide to Pixate

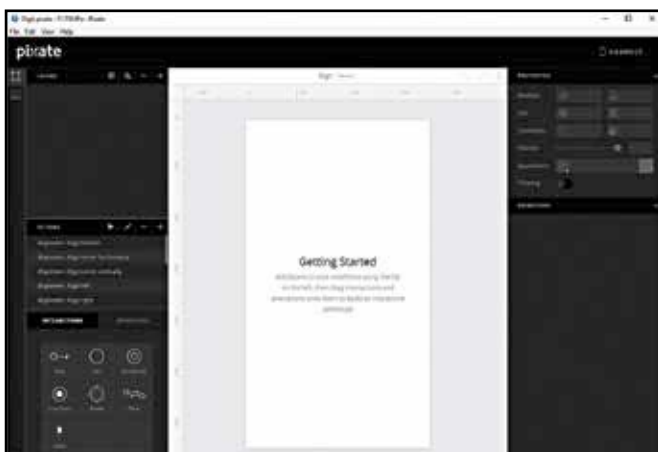
>> One of the hottest prototyping tools – Pixate is really simple to work with > by Mithun Mohandas

Pixate is what you'd call an app prototyping tool and they are a dime a dozen. For the uninitiated, prototyping is how you generate mockups or prototypes of applications without the need to know programming languages such as Objective C or Java. So every other person can easily bring their ideas to life and learn more about UX at the same time. Instead of having to hire a consultant from the get go, you can work out a good amount of the mechanics and create a prototype that's just short of being truly native to a platform. What's even better is that Pixate Studio is free and the company has been purchased by Google as part of their effort to develop new design and prototyping tools. This could very well mean that you might find Pixate becoming part of Android Studio.

There are plenty of prototyping tools but there's always been a tradeoff between speed and quality. Pixate is quick and allows you to create prototypes rapidly without any tradeoff, as it will be apparent soon enough. Let's get you started on some basic actions that can be performed using this nifty tool.

## User Interface

If you've ever used an IDE before, you'll quickly feel at home when you run Pixate for the first time. Take a look at the image below. This is the first thing you'll see when you fire up Pixate. On the very left of the window are two tabs, of which the first tab opens up the 'layers' panel that you see here and the second tab opens up the 'assets' panel. Assets are basically images of all the UI elements in different stages. For example, if you were to drag a menu bar around and wanted the bar to go out of focus then you'd create two images, one with the menu bar looking crisp and the other with the menu bar all faded out. You'd then transition between these two assets based on a trigger event. In this case, the dragging action would be the trigger.



A fairly simply and easy to navigate UI

The 'layers' panel is where you organise all the different layers of your interface. Almost everyone has used some sort of image editing software or apps such as Photoshop, Gimp, Pixlr etc., so the concept is quite clear.

Right beneath the 'layers' panel lies the 'actions' panel from where you can pick different animations to be applied to transitions. On the top right lies the properties pane that allows you to modify layer parameters like size, position, opacity etc. And right below the 'properties' panel lies the 'animations' panel, where you can define the animations for the selected layer. The centre houses the workspace where all the magic happens.

## A few pointers

Before you begin, you need to list out all the features you want from your app and generate assets for the device that you'll be working on. Resolution and pixel density should be kept in mind while generating these assets. Both Android ([https://developer.android.com/guide/practices/screens\\_support.html](https://developer.android.com/guide/practices/screens_support.html)) and iOS (<https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/>) have guidelines for designing apps which need to be followed to the letter. The Apple App Store is a lot more stringent when it comes to QC and it wouldn't be a surprise if your app were to be rejected for flouting guidelines.

## Get the app

Prototyping on Pixate happens in real time with all your changes being updated onto the app as soon as they're made, so you can reduce the time spent on prototyping your app. Simply download the app from the Play Store or the App Store and sync it with your PC / Mac.

## Begin prototyping

Start off by importing all your assets into the assets panel. Always make an image which would be representative of how your final app looks like and use that as a base layer to figure out where to place all the individual elements of the UI.

## Adding animations

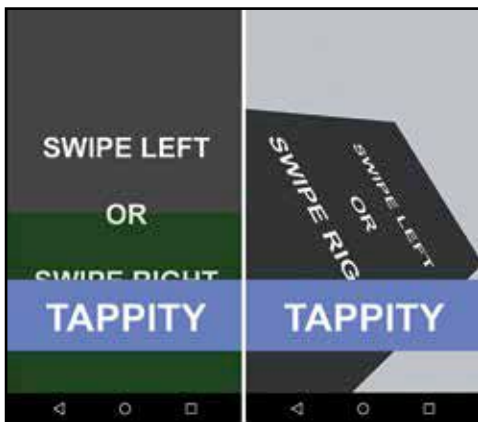
Let's start off by dragging an image (let's call it Button.jpg) onto the screen and giving it the properties of a button. Tap sets into motion an animation. So you can simply drag the 'tap' interaction from the interaction menu and drop it onto the image within the workspace, or drop it onto the specific layer in the layer panel.

There should now appear a new property in the panel that indicates that a Tap action has been added to the layer. Now you need to drag and drop another image (let's call this one Screen.jpg) onto the workspace. Reorder the layers so that the Button.jpg layer is on top of the Screen.



jpg layer. Now it's time to animate Screen.jpg when you tap on Button.jpg. Simply, drag and drop any animation onto the Screen.jpg layer. We've gone ahead with Rotate.

Now in the animation panel, you should see the very first drop down menu that says "Based On". This is where you link the animation to the Button. Select Button.jpg in the first drop down and then select the action that triggers the animation. In this case, you only have the "Tap" interaction available. Now you have multiple parameters to define how the Screen.jpg layer rotates. Select a pivot point from the nine point menu and insert appropriate values for each axis. We went with 45 degrees in all of the axes. Below, you can see how the action plays out.



Tap to rotate in action

### Moving between screens

Once you've gotten a hold of how animations work, you need to figure out how to switch between different screens. This is achieved by reordering and is ideally done simultaneously with an animation. When an animation on a layer has run its course, it still remains in its initial position. So all actions are still captured by the top most layer. In order for a newer layer to perform any action, the user should be able to interact with it directly and this is why you'd want to reorder the layers such that the new layer comes to the very top.

Reordering is just as simple as adding animations. Drag and drop the reorder animation onto whichever layer you wish to move and select the "Based On" parameter. Then select where the layer has to be moved to. You can choose to send it all the way to the back or bring it to the front. And if you prefer a more specific position, you can slot the layer behind/in-front-of element on the workspace.

### Grouping

And now for something slightly complicated. Grouping layers allows you to work out some interesting effects. Here's how you can achieve parallax scrolling using grouping. Start off by creating two different layers with one layer being slightly

## \*pointers

>>Interesting developer news



### What is Code?

>>This tutorial video combined with an interactive and comprehensive article explains what coding is all about.

<http://dgit.in/HwCodeWrks>



### Build a chess game

>>Watch this tutorial series that consists of 95 videos teaching how to program a chess engine from scratch in the C language.

<http://dgit.in/ChessTut>



### Wolfram Language

>>Stephen Wolfram introduces the Wolfram language, explaining how symbolic programming language can enable functional programming.

<http://dgit.in/WolframLang>



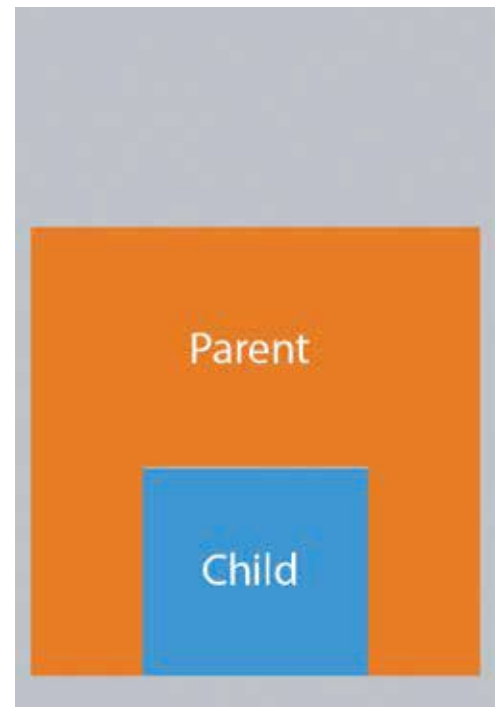
### Google Shaka Player

>>A video introducing Google's Shaka Player for the web that optimises video playback according to your bandwidth, among its several features.

<http://dgit.in/ShakaPlayr>



smaller than the other. Drag the smaller layer onto the larger layer to nest it. You now have a parent layer and a child layer. And now, like we'd done earlier, you need to add a "Drag" interaction to the parent layer and pick 'Vertical' from the properties menu for drag limiter.



For parallax scrolling, you need to have one layer moving at a slightly greater pace than the other. In this case, the child layer will be made to move at a faster pace so that it comes into view and exits fairly quickly. So you need to add a move animation to the child layer and link its animation to that of the parent. Select the parent layer under "Based on" and for the trigger, select "Drag Position". Under animates, select "Continuously with rate". Now, the child layer will move in unison with the parent layer, so to change the pace, modify the "Rate" to 1.5 and you'll see the child layer zooming past the parent layer. If you want the child layer to not pop out of the confines of the parent layer, then simply select the parent layer and modify the "Clipping" property to 'bounds'. The child should now be visible only when within the bounds of the parent layer.

### Go crazy!

These were just some basic examples for you to get started with Pixate. You can find more of these simple tutorials over at Pixate's official tutorial page and if you're in the mood for something a little more complex then you might want to check out this video to figure out how to build a Twitter prototype. <http://dgit.in/PixateTwitter> >



**>>Sanket Atal, Group Vice President, Product Development, Oracle India>>**

>> On the occasion of Java's 20-year anniversary we have a heart-to-heart about Oracle's future roadmap and more. >

**Mithun: Why would startups prefer big vendors like oracle for developing their middleware as compared to open source alternatives that they generally tend to go for?**

**Sanket:** As a company, Oracle is going through a major transformation right now and the mantra is that we are becoming a cloud first and mobile first company which is embracing the direction the entire technology landscape is heading into.

Now we have been in the area for quite sometime in various ways and most recently there has been a big announcement of our PaaS offerings, when we announced 24 services that people can use to basically leverage Oracle Fusion Middleware's strength. As you know the whole idea behind PaaS and the cloud is to essentially enable everybody to be able to leverage these technologies in a very easy manner. For example, Startups have to tackle some major barriers to entry. Some of which are the ability to host the application that they are developing, access to a framework that they can use and to be able to develop an industrial strength framework for their application. And the cloud gives access to great software at a very reasonable entry point. So they can get to market very quickly.

The two things that startups need is being able to develop their technology and the second is marketing. Marketing

has become easy thanks to quick and easy access to wonderful digital marketing software etc. and increased Internet penetration. And on the development side we are providing cloud solutions, particularly PaaS solutions to allow rapid development. So this is going to change the landscape quite a bit and we operate in all levels of the cloud – IaaS, PaaS, SaaS. We are a platform for startups to get their leg in the door.

**Mithun: Does Oracle have any programmes (with revenue sharing models) to encourage startups to adopt more of Oracle's products?**

**Sanket:** So Oracle as a company is very much dedicated to ensuring that the people can leverage the technology, to be able to grow. And in the startup world to be able to get their leg in the door.

The whole idea of the cloud being a great enabler for startups is a very important concept for us. As far as actual programs similar to the ones that you've mentioned, I don't believe we have declared any major programs like that currently but that's not saying we wouldn't do something like those in the future.

And I personally believe that if you take a look at the comprehensive set of services that we have, a lot of the needs are met and they enable startups to implement their product. For this they might need access to a data storage, identity management, tight security, and perhaps they'd want to introduce some business processes etc. plus they'd want to do analytics.

So in one platform you get the leverage to do all of these and you don't have to incur the cost of all the typical hardware acquisition, people acquisition to manage the hardware, software acquisition, platform acquisition etc. All of that is taken away and you are able to jump in with both feet very very quickly and I think that's the biggest benefit of the cloud offerings in Oracle's portfolio.

**Mithun: Could you tell us some of the important highlights of Java 9?**

**Sanket:** Here's what we are trying to do. Oracle R&D, as you know, is a large entity and it's truly global with a strength of about 30,000+ and more than a third of that happens to be in India. A significant part of Java development happens in India as well.

The way development happens in a global organisation that is spread around

the world is that, each one is a true peer, everyone gets to work on cutting edge technology. And we, at Oracle India, have played a very active part in Java 9's development as the ongoing process of maintenance of existing java releases etc.

One feature of Java 9, which we call Project Jigsaw internally, is getting a lot of recognition, and I think it's a great visualization of what you can achieve with it. The goal of this is modularity. When you are putting together an application, i.e. a java based application; you'd like to be able to package it in a manner that is fairly lightweight. What we allow you to do is to be able to declaratively select the various parts of the java platform that you need and package that, rather than going on all out and including everything that's provided because it's a very very rich platform.

There's another thing that I want to underscore in Java 8. One thing that is happening quite a bit is that every year there is a new language that comes out which is very interesting to work with on your client side stuff etc. Now what we provide is the ability for you to execute quite a bit on JVM, so your platform remains the same but you are able to leverage the power of all of these languages on the same platform. And that is something that I think about Java that is not very well known.

**Mithun: So let's say a startup that's starting out goes with open source solution but later needs to adopt OFM. Given such a scenario, will the shift to oracle fusion middleware end up requiring complete overhaul of the system or is it seamlessly ?**

**Sanket:** Basically, we have a steadfast focus on compliance with industry standards. For us, that has been a mantra for a very long time. So applications that are standards compliant can easily migrate to OFM, without much work. And we have implemented the ability for you to migrate your services to the cloud and vice versa using a click of a button in a very painless way. The whole beauty is that it's modular and you can easily integrate your services into a complex topology whether it's all Oracle or hybrid. So a heterogeneous setup is perfectly valid to leverage Oracle technologies whether it's a couple of services or an entire setup purely using Oracle's services.

Read the entire interview online:

<http://dgit.in/DevworxSA> >

## ITUNES

While Apple makes great devices that have garnered dedicated fandom, the same can't be said about the accompanying software. Or can it? With the last few iterations of iTunes, Apple has been accused of fixing what wasn't broken in their efforts to 'beautify' and 'simplify'. Love it or hate it, in true geek spirit we show you how to make the best of what you have!

### Un-vanish the Sidebar

The new multi-color logo looks jazzy but certain other aspects of the redesign are a pain, especially the absence of the Sidebar from the main screen. Although it's not gone altogether, the Sidebar only shows up under the Playlists tab. If you consider that a pain, feel free to write a mail to Apple. Enough feedback showing dissent and they may actually start to listen!

### Mini Switch to Mini Player

The latest redesign makes the Mini Player handier than ever, but if you're confused about how to access it other than labouriously going through the menu, fret not! Simply click on the Album artwork, next to 'Now Playing' at the top of the screen. The Mini Player appears that floats above your windows (make sure to check the box next to iTunes > Preferences > Advanced > "Keep Mini-Player on top of all other windows") for easy control over what befalls your ears while you work. Note: If you want the Mini Player above the iTunes window itself, go to the Menu bar > Window > MiniPlayer.

### Switch to a Micro Mini Player (Muzzy)

If the Mini Player does not seem minimalistic enough to you, download a great (and still free)



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*Tips & Tricks has its own page numbers, and does not follow the rest of the magazine's page numbers. This is done to ensure that you can cut out and save T&T in a separate folder for later reference.*



Muzzy - Minimalism in action

iTunes plugin called Muzzy. It runs from the menu bar and allows easy and intuitive control over song playback, especially



Muzzy - The Micro Player

great if you need to use the whole screen and don't want to keep switching to iTunes. Adjusting the position of playback within the currently playing song is as simple as clicking/dragging across the album artwork drop-down. It will even pause playback when your headphones are plugged out!

### Capture the heat of the moment - In a playlist

Want to listen to a song that just came to your mind, but



Add lyrics to your favourite songs

you like what's playing now, and so you don't know what to do? Right -click any song and select "Add to Up Next", a temporary On-the-Go playlist that gets modified as easily as your mood.

### Save space: Turn on Home Sharing!

If you have multiple devices running iTunes on the same WiFi network, you can use this nifty feature to access a common library across all devices. From the Menu bar select File > Home Sharing > Turn on Home Sharing. Do this and log in with the same Apple ID on all the different devices. You can save as much space as the number of copies of your Library!

### Apple Music - Buy into the hype at no cost!

In case you didn't already notice, Apple Music is promoting itself with a 3-month FREE trial membership. Though, you will need a credit card enabled Apple account to access it. Click on the tab that reads "For You" on the top centre of the iTunes window and follow the instructions to activate your free trial. Don't forget to deactivate before your trial is over to avoid being charged!





## Discover great music

If you're not the kind to give in to marketing gimmicks of large corporations, click **•••** on iTunes and open Internet Radio. You can edit the Menu while you're at it, and check the box next to it for easier access. There are literally hundreds of great stations to stream from that cater to every audio genre you can think of, except dinosaur mating sounds. Jokes aside, the Internet Radio is better than the Radio tab that is a part of Apple Music. As long as you have a decent Internet connection, you're good to go!



To listen or not to listen\_ Add to up next.



## Study for a test, or just for the sake of it

iTunes University existed long before MOOCs came along, and is still going strong. Access it by hovering the cursor over



You should check out Apple Music for a 3-month trial

the three dots (**•••**) on the top left corner of the main screen and selecting iTunes U from the drop down menu. There are a variety of classes from a variety of courses from the best universities in the world (MIT, Harvard, Stanford and the like). You can choose to save them to your library and sync them to your iPod for the next time you have time to kill on the metro or bus.



## Make your own audiobooks

This is another one for Mac users only. Click on iTunes, next to the Apple logo in your menu bar, and go to **Services > Service Preferences**. Alter-

natively, you can access it from **System Preferences > Keyboard > Shortcuts > Services**. Under Text, in the list on the right, add your preferred keyboard shortcut for "Add to iTunes as spoken track" and make sure the box is checked. Restart your Mac and the next time you open a text file or a pdf, use the shortcut that you saved earlier. A window will appear to confirm the choice of voice (lots to choose from!) and location to save the file. Voila! Your favourite text is now an audiobook on iTunes!



## Sing along to the lyrics of your favourite song

Do an Internet search and copy the lyrics of your favourite song to the clipboard. Right-click on the song in iTunes and select **Get Info** (or press **Command+I**). Go to the lyrics tab and paste. The next time you are playing the song on your iPhone or iPod, click on the displayed Album Artwork in the centre of the screen so you can read the words you are listening to. Or sing out loud if you're in the groove!



## Add time to your life

Managing an impeccably curated library with well referenced ID3 tags can be quite the chore. Add keyboard shortcuts

for the most commonly used tasks, if they don't exist already. Additionally, you can download AppleScripts that will make your life easier, there are many freely (but may not be easily) available on the internet. Open the Terminal and type "**cd ~/Library/iTunes**" without the quotes. Hit return. Type "**mkdir Scripts**" and enter again. You just created a folder in which to place your downloaded scripts. If you thought that was fun, turn it up a notch and teach yourself to use AppleScript. It's much like English.

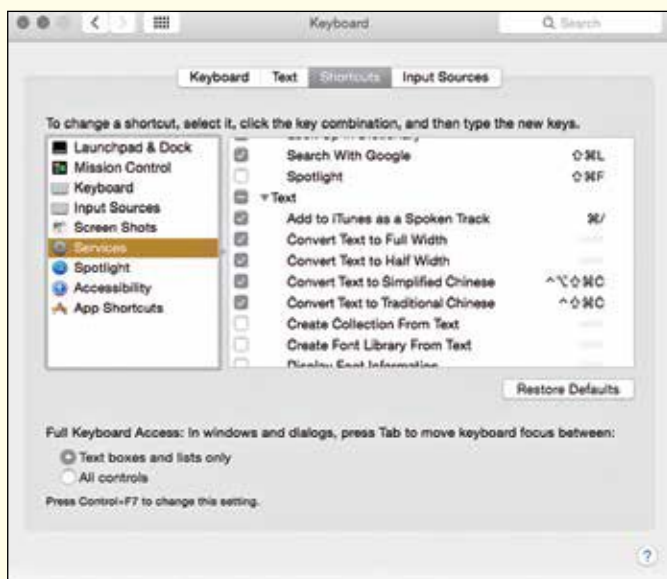


## Ditch iTunes altogether!

If you're of the opinion that iTunes is the next MS Internet Explorer, save yourself the headache! The only reason many people use it is that it is the recommended and default media manager for your iDevice. There are some great alternatives available at no cost that can do the same job and aren't made by capitalist corporations that couldn't care less about their users. For a complete iTunes replacement, try Songbird, Foobar2000 or MediaMonkey. If you want a no-frills media manager dedicated to the job of syncing your device, try Copy-Trans Manager.

## MICROSOFT EDGE

Developed under the codename Project Spartan, Edge is Microsoft's shiny, revamped Internet browser that is phasing out the tired and weary Internet Explorer. Still in its nascent stage, Edge's mission is to edge out the huge userbase share that Google's Chrome web browser has right now, and be a strong competitor to Mozilla Firefox and Opera. The Microsoft Edge brings a slew of new features and will be the primary browser built in Windows 10. The browser will come with Cor-



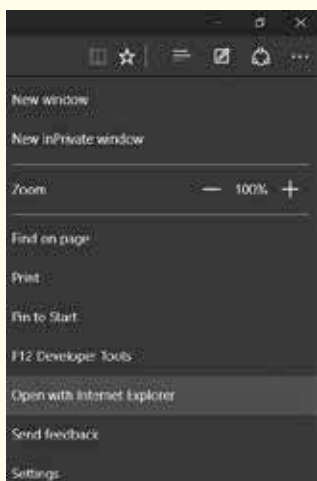
Use a shortcut that isn't already in use!



Change your default search

tana support. Built-in features include reader, note-taking and sharing. Based rendering engine called EdgeHTML, the new browser will offer a simple and minimalism design language. The browser is expected to support web extensions built via HTML and Javascript. Extensions built for Chrome can also be deployed on Edge with a few adjustments in codes.

Released about a month ago as a highlighted feature of Windows 10, Edge is fast, responsive and pretty neat to work on. Microsoft is still working on adding extensive lists of plugins to Edge, so it has presumably



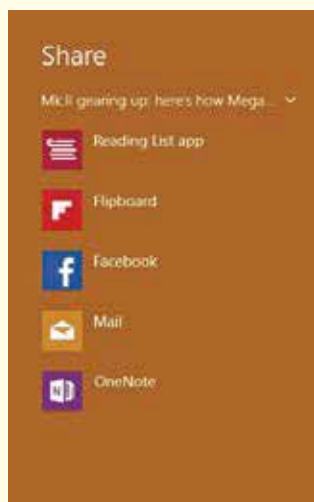
Opening pages in legacy mode

got a lot more to show. But until now, it has had a fairly impressive start. Here's how you can go about fine-tuning Edge to make the most of it.

## Changing the default search engine

Microsoft has set its own, Bing as the default search engine in Edge. To change it, click on the three dots (Ellipses) on Edge's search bar, go to Settings > Advanced Settings, and scroll down to find 'Search in the Address Bar with'. At first, you may find only Bing as an option, without any way to add any search engine. This is because you haven't visited any search engine yet, and Edge hasn't picked up its OpenSearch description.

To change that, open your preferred search engines



Sharing webpages to other networks

Java isn't loading on a webpage in Edge, it is because the plugins have not yet been added, and you can continue to access the entire page with all plugins by opening in IE.



Annotations can be added to webpages and text can also be highlighted and shared

(Google, DuckDuckGo, etc.), and then look up in the options. You will find that the search engine has been added to the list. Select the one you want, and click on 'Add as default'. Opening any search on a new tab will give you results from the search engine you selected, no browser restart needed.

## Opening pages in Internet Explorer: Legacy Mode

Edge provides legacy support for plugins, by including an Internet Explorer mode within it. Chances are, if Silverlight or

After opening a page, click on Ellipses, and select Open with Internet Explorer.

## Adding Annotations

A particularly handy feature, Annotations helps in underlining, highlighting, adding text notes and saving clips from articles. To access this feature, click on the pen-and-clipboard icon on the right hand side of Edge's Address Bar. This opens up the tools for annotating an article. Placed on the right side of the bar, you get a free-form Pen, a free-form Highlighter, an Eraser, a Text Note Annotation,

and a Clip tool which lets you save a certain clip or area of the page you intend to save.

You can change between 12 colours for the Pen, six for the Highlighter, and three nib sizes for both. The Eraser can be used to clear all ink you've used on the page, giving a 'delete all' option here. The Clipping tool, in reality, is a dedicated Snipping tool for Edge. Options to save or share your note is to the right of the top bar. You can save your annotations to Favourites, OneNote or the Reading List, and share between Mail, OneNote and Microsoft's new Translator, as default options.

## Sharing Webpages

A neat, app-like feature that allows you to share the webpage you are on directly to the platform of your choice. The

Share button is the second from right on the Address Bar. However, by default, you might not find too many options to share to. To add services, go to Microsoft Store and install the application. For instance, you can download the Reading List app from the store, and share stories on to it for you to access them from your desktop.

## Integrating Cortana

By default, Cortana as an overall service has not yet been made available for India. To enable Cortana's assistance inside Edge, you will first need to



Adding Cortana to Edge

activate Cortana for desktop. By default, Cortana is turned off for India, and hence, this Edge feature is not available. To turn it on, search 'Region' from the taskbar search area. In Region settings, select English (United States) under Formats tab. Under Location tab, select Home Location as United States, and finally, under Administrative tab, click on Change System Locale, and change it to English (United States). You will be prompted to save settings and restart your PC. Ensure that you have the English (United States) language pack installed. To verify, go to Search > Language.

After restart, you will find Cortana's symbol in place of the plain Search box, along with a microphone symbol to the right, and 'Ask me anything' written in the middle. You can now open Edge, go to Settings > Advanced Settings > Have Cortana assist me in Microsoft Edge, and turn it on.

## Disabling Flash Plugin

The Adobe Flash Player plugin is pre-installed in Microsoft Edge, so that you can view all your flash content without a



Turn off the Flash Plugin in the Advanced Settings

glitch. However, if you find your flash player crashing or running unstable, you can choose to turn it off instead of having to remove it. Hence, when further updates and stable builds are pushed through, you can simply update your browser and switch it back on. You can access this from Settings > Advanced Settings > Use Adobe Flash Player, and turn it Off/On.

## Reader View and Reading List

Alongside Annotations and direct sharing, this is the most useful addition to Microsoft Edge. Reader View removes any external content from articles, presenting you with the text in entirety, and its cover image (if any). You can switch to Reader view by clicking on

the book (Reading View) icon, or Ctrl+Shift+R. To save an article into your Reading List, click on the star next to the Reading View icon. There are two options for you to add the page in: Favourites and Reading List. You can add choosing your own discretion, name the page and click Add.

You can also change how your Reading View looks. Go to Settings > Reading. You get two options: Reading View Style and Reading View Font Size. For Style, you can choose between Default, Light, Medium and Dark. Font Size options are



Choosing your Start page

browser, or a custom set of pages. Go to Settings, and select one of the four options. For custom



Choosing what to view when a new tab is opened


Small, Medium, Large and Extra Large, to aid impaired vision.

## Choosing Start Page, New Tab view and Home button

You can choose to start Edge with a custom/preset Start page view, a New Tab, previous websites you leave while closing

pages, select 'A specific page or pages', type your preferred URL into the bar below, and click on the Add button.

On the 'Open new tabs with' option, you can choose between Top sites, Suggested content and Blank page. Suggested content will give you a curated tab-based MSN News view. When you open a new tab, there is an option to customise the page to the right of the top sites, where, along with new tab view options, you can choose your preferred language and region of content, and preferred topics for the news feed. Right now, you can choose between Autos, Entertainment, Lifestyle, Money, News and Sports.

To enable the Home button, go to Advanced Settings > Show the home button. Switching it on gives you a URL bar, where you can enter your preferred URL, and click the Save button. 



Reading View gives you a clutter-free reading experience



Digit is hiring.

If you think you have what it takes to put words onto this page, write to us at [editor@digit.in](mailto:editor@digit.in)

**Workshop**

We show you how to make your existing installation of Windows 7 or 8 look and feel like Windows 10

**Microsoft Explains**

Feared that Windows 10 might block your pirated games? Check out here how it happens: <http://dgit.in/winxprrtdgms>

# Of accidental water spills on precious components, noisy PCs and power fluctuations...

For all the times when you're stuck between a rock and a hard place as far as technology is concerned, we're here to help you troubleshoot it all. Just follow our trail of breadcrumbs and you'll be sorted.

## **Q Power fluctuation causing trouble**

Hi Team Digit, I live in Hisar, Haryana and I've been having a problem with my PC that I mainly use for designing work. The area that I live in suffers from frequent power cuts and fluctuations which I think has wreaked havoc on my system. Lately, I have seen that right after a power fluctuation happens, my PC restarts immediately. Not only that, the PC completely shuts down once there is a power loss which is absolutely weird considering I have a UPS connected to the system for power backup. My system is hardly a few months old and the UPS should be around one and a half years old. Can this problem be because of my UPS? I can't seem to understand where the problem lies. Please help. Here are my system specifications:

- Processor: AMD FX 8320;
- Motherboard: Gigabyte GA-970A-DS3P;
- RAM: Kingston 8GB;
- Graphics Card: ZOTAC GTX 560;
- Storage: 2TB WD Hard Drive;
- PSU: Cooler Master 750 Watts
- UPS: APC 1000 VA

—Ashish Chauhan

**A** Hi Ashish! Power issues can take place because of a number of things. From what you've described, it seems like your PC's UPS is to blame here. Firstly, only connect your system to the UPS and nothing else, also make sure that you switch off all high power consuming devices in your house like an Air-Conditioner for example and work on your PC until the power fluctuations happen. Now to check whether there really is a problem with your UPS, get hold

of someone else's UPS, connect it to your system and see if the same problem arises, if not then you should get your UPS repaired or get a new one. If for some reason you find that the UPS is actually fine, then the issue can also exist because of a faulty Power Supply. So you should also replace your power supply with someone else's and check again if the restarting issue persists during power fluctuation. If yes then send your PSU for RMA. Also, it'll be good if you can call in an electrician at your place and get the wiring checked for potential issues.

## **Q I spilled on it, maybe I killed it?**

Hi! I built a decent gaming rig for myself just a couple of months ago and I did a stupid thing of keeping a glass of water on the top of my PC case as the glass toppled and some water went inside the case from the top vents while most of it fell on the side of the case. I hurriedly switched off the PC and opened the cabinet to inspect the damage caused. I saw that the CPU heatsink fins had a few drops of water on them and so did the heatspreaders on the RAM and the backside of my precious GPU. But the worst hit according to me was the power supply as I think quite a lot of water drops went inside it from the fan area. In order to inspect properly, I removed a few components like the GPU, RAM and CPU heatsink from the system and laid them out on a table for two whole days under an incandescent light bulb. I also checked the slots on the motherboard for water drops and wiped off every area I could find inside that might've gone wet. In fear of voiding

my PSU's warranty, I didn't open it to clean it but I kept it to dry out for almost four days and also shook it to make water come out if there was any inside. Then after much deliberation I re-installed all the components and powered on the PC again. I was happy to see that the PC booted up properly without any hiccups but after a few minutes of using, it shut down automatically. This was scary to witness and that's why I didn't power on my PC again after that. What do you think is wrong with my system? Will it work again? Please advise.

—Parthiv Shah

**A** Water is the worst enemy of computer components and you should always keep it far away from them. Now that the damage is already done, you have a few options at your disposal. Since the PC was on during this unfortunate incident, it could've easily short circuited something or the other but it's possible that it might've not. Most of the times, it takes around a week or so for water to dry out completely which is hugely dependent on the humidity of the place where you live. The best course of action is to take apart everything from the system including cables and leave all of it outside to dry. And you should keep changing the position in which the components are sitting after every few hours that is by tilting the components at different angles so that water can get out of particular areas if there's any still left. As for your Power Supply, let it dry out the same way as said above. Almost every good PSU these days comes with good circuit protection and since only a little bit of water went in and you managed to run the system for a for a



## DIY: Recording without a mic

Need to record speaker sound? Need to identify a song without microphone? Know how it happens here: <http://digit.in/virtuallaudcble>

Q&A

few minutes, there might still be a bleak ray of hope for you. Once the components are dried completely, put them back inside in one-by-one. Use the trusty old trial and elimination method of installing and checking components one-by-one to find the culprit that's causing trouble. Also, source a PSU from someone and use that in your PC instead of your own PSU to check whether the PC still shuts down. If it doesn't, then you know where the error lies. And if the PC still shuts down, then it might be a problem with your motherboard as well. Meanwhile, you can get your dried-up PSU checked from the service center and get that sorted out as well.

## Noise is giving me a headache

Hello Digit. I'm someone who likes to work in a really quiet environment because that's when I'm the most productive. Which is why I was wondering whether there's any way in which I can make my PC run quieter. Lately, I've been hearing some whirring sounds from the case and previously when there were no whirring sounds, the default



Dust clogs up on the fans and makes them noisy

sound coming from the case was still on the higher side according to me. Please suggest me ways to make it run quieter so that I can work in proper silence. Thanks.

—Aditya Prajapati

**A** From what you've described, it's certain that your PCs case fans are to blame for the noise. It's understandable because case fans are the primary cause of noise coming from most computers. Also, CPU heatsink fans run fast or slow depending on the heat that the CPU is generating under load which is why you'll hear the heatsink fan spin with

an audible whir when the PC is under high stress. So, if you want to get rid of the noise, you'll need to open up your PC case and clean all the fans installed inside as dirt clogs up on the fans over time which can be one of the reasons for the whirring sound. You can use a soft piece of damp cloth coupled with ear cleaning buds or a can of compressed air to do the cleaning efficiently. Using a soft paint brush for cleaning would work as well. But since you said that your fans have always made a lot of noise, it'll be better if you go ahead and buy silent fans for your PC case as most of the times, the stock PC case fans are loud. Firstly, check your cabinet and weigh your options as far as the case fan size is concerned because your case may support fans of only a particular size. Head over to the cabinet's product page online or check out its user manual to know the same. Once you know which size to go for you can easily find silent case fans at e-tailers or your neighbourhood computer store. We suggest you to go for case fans made by Noctua as they have a reputation for manufacturing extremely silent fans that offer great cooling



A can of compressed air can help you clean a dusty PC

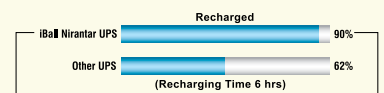
as well. For 120mm requirements, the Noctua NF-F12-PWM is a really good choice but be ready to pay a premium for it. Additionally, to make your case more silent, you should also clean the GPU fan fins, tighten all case fans with their screws because keeping them loose would make them vibrate, use rubber gaskets around the fans to decrease vibration even further. You also have a choice to go either for a silent PC case that features sound dampening materials inside or a silent CPU cooler or both. Let us know how it works out for you. **D**



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### Back to Old School!

LG has launched a new Android Flip Phone with smartphone features and is 4G ready. Check it out: <http://dgit.in/lgflipphone>



### The 'Firm Worm'

Mac users, beware of the Thunderstrike 2 worm! It infects your BIOS and leaves no solution. Read more: <http://dgit.in/macfirmworm>

# Making it look like Windows 10

Turn your existing Windows 7/8/8.1 systems to look like Windows 10, while also incorporating few of the significant changes with the help of third-party tools and applications.

Abhijit Dey  
[abhijit.dey@9dot9.in](mailto:abhijit.dey@9dot9.in)

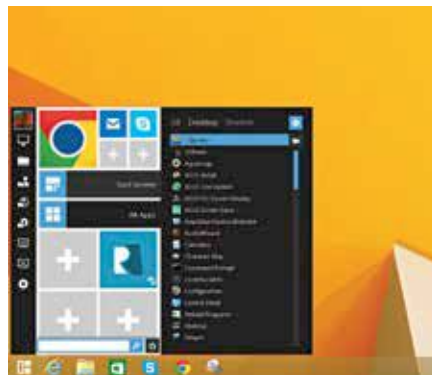
It's been more than a month since the public release of Windows 10 and after seeing all the feature updates and the deceptive snooping efforts by Microsoft, if you are yet to be convinced about upgrading your existing Windows 7/8/8.1 system to the latest offering, don't fret. Here are some of the tools and software that will bring certain features like the Start Menu, Window Snap, Task View and Virtual Desktops to your older Windows operating system without actually upgrading your OS.

*Note: While installing third-party tools, ensure that you select the Custom installation setting and deselect the extra software it tries to sneak in.*

## Tiled Start Menu

The release of Windows 8 received a lot of flak from Windows users, pertaining to the onset of the new features. The most notable was the annoying Modern UI design and especially the discontinuation of the iconic Start button. Microsoft had to eventually release an update (Windows 8.1) later, bringing back the old Start button, along with a few changes to the interface of the Modern UI theme.

The Start Menu on Windows 10 is more or less the same as seen on Windows 8.1. The changes include the most used apps to be listed followed by buttons at the bottom, more animations to the tiles and a translucent background. If you're running a Windows 7 or 8.1 system, you might start envying the design of the new Start Menu that also includes



Revamp your start menu.

Cortana. A tool called Start Menu Reviver 2.0 does a good job of replicating the Start Menu from Windows 10 but sadly doesn't include a Cortana-like assistant. Although the design is really close to the layout of Windows 8.1, it definitely is a complete revamp of the Start Menu from Windows 7. You can add apps and arrange

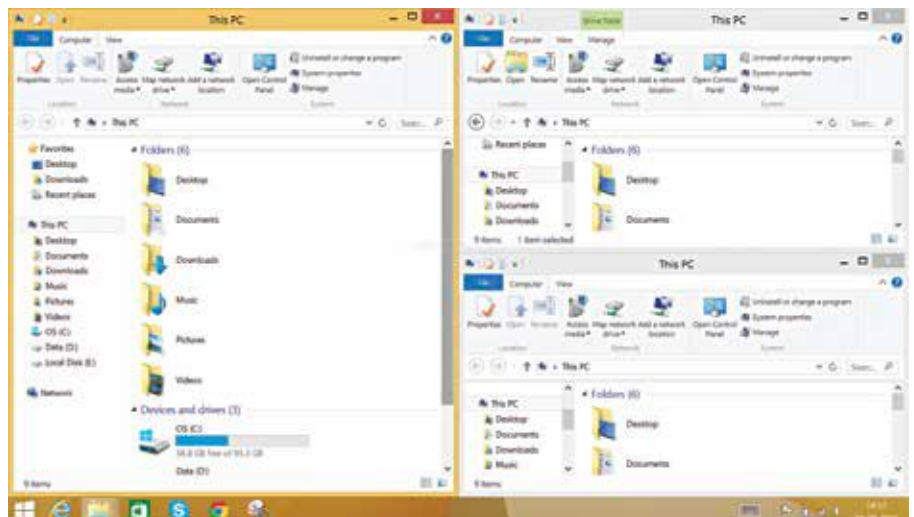
the layout of the tiles the same way. It also includes a column of useful shortcuts like My Computer, Control Panel, Network, etc, reducing the number of steps required to access them.

Link: <http://dgit.in/StartMenuRev>

## Window Snapping

The window snapping feature has seen a lot of enhancements from the first time it was introduced in Windows 7. Earlier windows snapped to a pre-defined size on the desktop area and now in Windows 10, it has more freedom to snap with variable sizes of windows, a feature named Quadrants. This means that you can have more than two window tiles open and visible on your desktop on Windows 10, contrary to the previous versions of Windows.

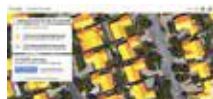
AquaSnap further improves the snapping feature by giving you freedom to snap a maximum of four windows to the entire desktop which is one quarter of the screen. Unlike Windows 10, the windows snap to each other and not just the desktop area. AquaMagnet enables you to resize two or more windows together side by side and not individually. Another



You can snap up to a maximum of four windows to increase productivity.

## Code Doodles are here!

This amazing chrome extension shows you code doodles on every tab. Check it out: <http://dgit.in/codedoodlecrm>



## Project Sunroof

Using high resolution satellite imagery, Google measures how much you could save by installing solar panels. <http://dgit.in/gprjctsunroof>

Workshop

helpful feature – AquaGlue lets you group certain windows together falling under one category. Once grouped, you can move the windows snapped together anywhere on the screen. While working on multiple windows, you could be accessing data on more than two windows. Under Aqua-Glass you'll be able to turn any window transparent, making the content visible even with the window on top of it. If you want a window to always stay on top, you can enable AquaShake and also set the transparency meter of the other windows.

Link: <http://dgit.in/AquaSnapWin>

## Virtual Desktops

A completely new feature for Windows, virtual desktops has been a boon for Linux and Mac users for a while now. If you're working on multiple windows and simultaneously handling different projects on the same computer or screen, you will end up plugging another monitor to your workstation. Multiple screens give you more viewable area to tone down the clutter from your desktop and make it easier for you to work. Virtual desktops emulate the same thing where you can switch between the virtual screens and manage the files and folders individually.

The Dexpot tool extends the virtual desktop feature to your older Windows 7/8/8.1 system, so that you can have a clutter-free desktop. Using Dexpot is child's play and after installation, an icon will appear in the taskbar by which you can switch between four different virtual desktops. Windows Catalog – an advanced feature displays all the windows in a single desktop view so that you can move applications across your virtual desktops.

Link: <http://dgit.in/DexpotWin>

## Task View

After you open a number of windows on your desktop, it becomes quite frustrating to search for a specific window. The clutter is visible in the taskbar as well and the only way to tackle this problem is by using task view. Already handled pretty well on Mac OS, task view has made its way to Windows 10 and now you can switch between applications with a simple shortcut.

Switcher 2.0 makes switching between applications and windows easier by

displaying all the windows in a numbered grid, so that you can select the desired one. The tool will let you select the pattern you want your apps to be displayed in under options of random sized tiles and proper grids. You can assign your own shortcut to activate the task view as long as it doesn't conflict with the existing shortcuts of the OS. You are also offered certain advanced features to edit the delay of the animations, size of the grids and more. Tweaking them might mess up the existing values but you don't need to worry about tweaking them if you are comfortable with the default setting of Switcher 2.0.

Link: <http://insentient.net/>

## Command Prompt

The command prompt on Windows 10 went through many changes and it was about time that certain long-awaited changes were updated. You couldn't even resize the window since you were restricted to the screen buffer of 80. You couldn't even select the text with your cursor, leaving no room for the copy and paste commands, making it very difficult when you're entering complicated commands. Microsoft finally listened to the users and Windows 10 now supports all these features. If you are still on the previous versions of Windows, you will face the above mentioned problems even now. ConEmu is the answer for you in that case. It looks like a command prompt on steroids featuring tabbed sessions, multiple consoles and a very high level of customisation. Other than the features from Windows 10 command prompt, ConEmu includes a number of extra features enabling you to run many GUI apps in tabs for debugging, code checking and other services. You can even split tabs into different screens and navigate across them just like you do with your browser tabs. If you're a frequent user of Notepad++, you can launch the software inside a tab and further split the screen if you wish.

Link: <http://dgit.in/ConEmuWin>

## Storage Visualisation

One helpful feature in Windows 10 that we observed was the ability to visualise the storage taken by the type of content stored on the hard drive. It lists out all the

drives and if you click further, you will be presented with the distribution of content in the drive under categories like apps and games, documents, pictures, music, videos and more.

The previous versions didn't have any default tool to visualise the content so you'll have to rely on a third-party tool like DiskSavvy now. This software analyses your hard drive and gives you an over-



Swanky looking storage information

view of the type of content present in the drive. You can also create charts to view the percentage distribution of content, filter and categorise files according to your requirements and generate disk space usage reports.

Link: <http://dgit.in/DiskSavvy>

## Windows 10 Transformation Pack

Transformation packs are quite common and an easier way of changing the interface of your OS. They completely change the look of your existing operating system by applying a theme that updates icons and images to look like the desired theme. Transformation packs are safer comparatively since they don't touch system files to add a new feature and are mostly focused on tweaking the look of the interface.

There are certain transformation packs that do come bundled with software to further enhance the transformation and the Windows 10 Transformation Pack 5 is one of them. Along with upgrading the theme to look and feel like Windows 10, it installs a few of the above mentioned features including virtual desktops, Cortana-based search and the start menu. If you don't want to spend time installing individual tools for the features, then this transformation pack is what you should go forward with.

Link: <http://dgit.in/Win10TranPack5>



IMAGING: BAIJUN V

# FACE OFF: ANDROID FLAGSHIPS

We pit the meanest and most powerful Android smartphones against each other in a free for all exhibition match to find out which one's the real boss.





## Space in VR!

A kickstarter campaign has been started by SpaceVR to send a 12-camera rig that shoots 3D, 360-degree video in VR. <http://dgit.in/3dspacevr>



## 4K from space

Nasa has released a space grown food event in 4K. Check it out here: <http://dgit.in/nasasalad4k>

Smartphones

Prasid Banerjee

[prasid.banerjee@9dot9.in](mailto:prasid.banerjee@9dot9.in)

So, Samsung just launched the next iteration of its Note series. You know what that means? Of course you do! It means a new generation of Android flagships is coming. That consequently means this generation of flagships are going to get cheaper. So, it's the perfect time to draw out a comparison between the best out there. Make a note of these devices, as

any of them may pick up a Zero1 Award or two in a few months.

The market is flooded with phones today, and unlike the old days, there's much more quality available. Deciding which smartphone to buy is somewhat like Sophie's choice nowadays isn't it? Do you want a good camera? Do you want power? Or maybe battery life is what you're going for.

Well, a flagship, by definition should be a complete smartphone. This means it is premium to the power of infinity

and shows the best the company can do in all aspects. We have a pretty formidable collection of phones too, some from this last generation, and some a bit older, since their successors haven't come to India yet.

In case you're wondering, yes, the OnePlus 2 is part of the comparison. Although, we must say that unlike most comparisons where we wait for the results to speak for themselves, this time we were quite sure of the outcome already. Given the internal firing power of the

devices here, there were hardly any surprises as far as the test results go.

So, without further ado, let's get down to brass tacks.

## SONY XPERIA Z3+

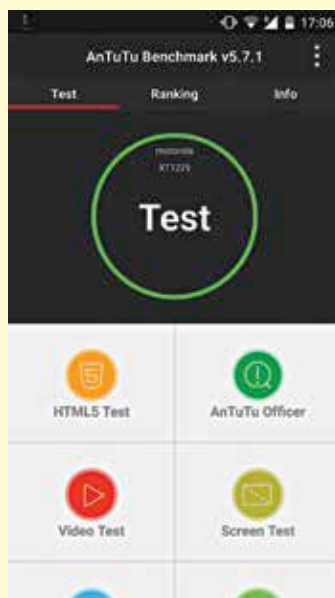
Sony's current flagship has been caught in the Qualcomm Snapdragon 810 debacle. Unfortunately for the company, it couldn't deal with the heating issues on this processor effectively. Hence, if you're using this phone, you will have a phone that literally heats up at the drop of a dime.

## HOW WE TESTED

Testing flagships is always more difficult than others. In a camera comparison, we look at just the camera, while battery life comparisons put the main emphasis on battery. In flagships though, you have to test everything, and ensure that you pick the absolute best performer.

We started of course by using synthetic benchmarks, gaining an idea of what each phone can do in a simulated environment. A huge part of our focus though was on real world testing, what does the phone's SoC lack? Mobile processors today boast huge number of cores with higher clock speeds, but we all know heating is an issue, especially in India. So, we made sure to pick a winner that doesn't have heating issues.

Next came the comprehensive camera tests. This was probably the toughest part of the job. Have you seen the cameras manufacturers are putting on their flagships today? Well, they can never be too good though right? So, we put them through the usual tests. We took the nine phones in this test and clicked identical images under low light, sunlight, indoor fluorescent lights and the yellow lights we have in our studio. We took these images and put them side by side to



this there's the daily regular usage parameter, which all phones that are tested here have gone through, and hence we have an idea of how long the battery lasts under practical situations.

With performance, battery and camera out of the way, we were left with the build quality and design of each of the phones. In addition, their respective UIs/OSs were also taken into consideration since they've come to play a big part in the user experience with each passing day. So with all that done, we were now sure of which phone would be the absolute best performer and which would be the best buy. There's also the editor's pick,

figure out which one's are the best, which fell just short and so on.

Next came the battery life tests. This was a mixture of our own looping video test and the Geekbench 3 battery test. We've come to trust this benchmark a lot, since it allows for exactly the same conditions on each device. The Geekbench 3 battery test takes the battery from 100% to 1% and notes the time taken to do so. Having done this on each device and matched it with the scores on our own looping video tests, we have a clear idea of which phone's battery lasts the longest. On top of all

which is the phone we would buy, irrespective of the results of the comparison.

Lastly, the phones that are part of this comparison are – Samsung Galaxy S6 Edge, LG G4, Sony Xperia Z3+, OnePlus 2, HTC One M9+, Asus Zenfone 2, Huawei Honor 6 Plus, Motorola Moto Turbo and last but not the least, the Xiaomi Mi 4. As mentioned before, the Moto Turbo, Xiaomi Mi 4 and Honor 6 Plus don't have their successors in India yet, so they were taken as the current flagships from their respective brands.

Now that we're through explaining that, here's how things turned out.



### Extreme Control Panel V1

This 100 button completely backlit control panel is truly badass. Check it out here: <http://digit.in/blcontrolpanel>



### GIFs on iPhone

Awful at making GIFs on iPhone? Giphy - the GIF camera app recently launched on iOS is all you need. <http://digit.in/igiphycam>



Sony Xperia Z3+

That's not all though. The Xperia Z3+ also looks almost exactly the same as the Xperia Z2, which is a disappointment. It looks good, just not different or new. Moreover, the processor's heating issues affect the camera performance as well. The Xperia Z3+ has a pretty good camera, but you can hardly use it, especially for video, since the processor heats up and leads the camera app to crash almost every time.

What we would commend Sony for though is the positively killer display that this phone has. The Japanese giant has proved that it doesn't take a QHD resolution to make the display look good. It's right up there with the best in our list and easily the second best display out there. Yes, the best is also in this comparison.

The Xperia Z3+ has a display that tends to be biased towards the cooler side, but doesn't do enough to be hated. In fact, it displays very accurate colours and feels amazing.

### LG G4

From the second best display to the first. If Sony's display was a little biased towards the cooler side, this one bends towards the warmer. Like Sony though, it does it just right. It's not an AMOLED display, but LG's display takes the Galaxy S6's Super AMOLED for a ride and leaves it in the desert. The QHD resolution makes it really sharp and the contrast and colours are just lovely. The best displays today do tend to be a tad biased towards the warmer side, and this one proves it.

The 5.5 inch display is further complemented by the camera here. LG marketed the hell out of its 16MP laser assisted auto-focus camera and correctly so. On our tests, it took better shots than all others, even edging out the Galaxy S6 Edge by a bit. It's super fast and takes very accurate images in all light conditions. The laser auto-focus is at its best when shooting macros though.

LG's downfall though is in all other departments. The hexa-core Snapdragon 808 is a bargain LG had to make following the Snapdragon 810's failure, and while this processor does the job for regular tasks, it's just not the best performer you can get today.

Also, the leather back is not working for the LG G4. We got units from the company twice, once for the review and once for this comparison. And both times the leather had blackened at the corners. The leather is also pretty easy to scratch which is a downer for a premium flagship device. What is most disappointing though is the size of this phone. Remember how LG had nearly perfected the art of making a 5.5 inch device feel compact with the G3? Well, this one is big and unwieldy, even with its curved back.

### HTC ONE M9+

HTC's current flagship is one that's trying to catch up with the rest of the world. The lacklustre sales that HTC has seen over the years have followed to the M9+. It is one of the few flagships in India right now that sport a MediaTek Helio X10 processor, and while there are good things about it, it's got too many weaknesses.

For one, like the Xperia Z3+, this phone looks no different than its predecessor. In fact, HTC's dual-tone metal finish doesn't look or feel as good as the HTC One M8. It is still a sturdy build and the M9+ is a good looking phone, but it's essentially a rehashed version of the HTC One M8. From a company that boasts its design elements, it's a rather disappointing result especially in front of the competition.

More importantly though, the MediaTek X10 processor



LG G4



## ABC....WTF?

The ABC.WTF prank started surfacing after Alphabets launch. Type in abc.wtf and know it yourself. <http://dgit.in/gabcwtf>



## Quirky Honor 7i

The Huawei Honor 7i features a swivel camera and has a fingerprint scanner on the side. <http://dgit.in/HHonor7i>

Smartphones



HTC One M9+

on this has more ups than lows and we suspect it's more HTC's doing than MediaTek's. While the Helio X10 does well for regular tasks, even clocking some good scores on benchmarks, the GPU performance is annoyingly bad. On the GFXBench Manhattan Onscreen test, the phone does only 272 frames compared to the 900+ and 1300+ on the Galaxy S6 Edge and OnePlus 2 respectively. It doesn't help that despite the low performance, the phone also has a tendency to heat up quite easily.

While the processor performance is a major downfall, the Helio X10 can still handle regular tasks effectively. The biggest negative here is the camera. The duo-camera on the back boasts a big pixel count of 20MP+2.1MP, but it doesn't translate to anything in the real world. The HTC One M9+, like the Moto Turbo, has a very average camera for a flagship

phone in today's world. The Galaxy S6 Edge, LG G4, One-Plus 2 and all others outclass it by miles.

It gains a little more value since its price has been dropped to below 40k now, but that still doesn't cut it for the HTC One M9+.

## HUAWEI HONOR 6 PLUS

Over time, many phones had laid claim to the throne of the best camera phone in the market, but none could really edge out Apple's iPhone. Which is why the Honor 6 Plus will always hold a special place in everyone's heart.

Huawei put in a dual-8MP camera here, which was good enough to beat the iPhone 6. In Digit's lab tests, this was the first phone to truly surpass the iPhone's camera. The Honor 6 Plus paved the way for the LG G4 and Galaxy S6 to absolutely

destroy the iPhone 6's camera. Unfortunately though, the camera is the only real strength the Honor 6 Plus has, and it lost out on our performance and battery tests. In addition, the phone is slippery in the hand and has glass on both front and back, giving you more to break.

It didn't help that both the Galaxy S6 and LG G4 beat the Honor 6 Plus' camera either. The Honor 6 Plus still remains one of our favourites in the camera department though.

## ASUS ZENFONE 2

Onto the two most interesting phones of the year then. We'll start with the Asus Zenfone 2, which is possibly the most talked about phone of the year after the OnePlus 2. It is also the world's first phone to have 4GB of RAM. That had us drooling from the get go, since multi-tasking is what we need all the time.

The Zenfone 2 makes another powerful statement too, and that's on behalf of Intel. The Intel Z3580 SoC on this one surprised us all and showed that the grizzled veteran in the processor industry is in no mood to give up the smartphone SoC market. Beware Qualcomm and the likes!

While the 64GB variant is available at less than 25k, the Zenfone 2 churns out performance that can rival all other flagships. In fact, if you consider the amazing gaming performance the PowerVR GPU provides here, the Zenfone 2 is actually a better performer than the LG G4 and Sony Xperia Z3+, while costing less than half of what they do. And that's saying something.

Asus needs to really work on its design though. The Zenfone 2 is unnecessarily large. While we're fast coming to the realisa-



Huawei Honor 6 Plus





## Snapshot on a Tap!

Before Google could launch Google Now on Tap, Bing launched its new 'snapshots on tap' feature on Android M. Know more here <http://dgit.in/snapontap>



## Beautiful SSDs

Brinell - a German company has crafted SSDs in beautiful textured variants <http://dgit.in/lookofssd>



### Specifications

	Samsung Galaxy S6 Edge	LG G4	OnePlus 2	Asus Zenfone 2	Sony Xperia Z3+	HTC One M9+	Moto Turbo	
Display	5.1 inch QHD Super AMOLED	5.5 inch QHD IPS	5.5 inch FHD IPS	5.5 inch FHD IPS	5.2 inch FHD IPS	5.2 inch QHD IPS	5.2 inch QHD AMOLED	
Processor	Exynos 7 Octa	Qualcomm Snapdragon 810	Qualcomm Snapdragon 810	Intel Atom Z3580	Qualcomm Snapdragon 810	MediaTek Helio X10	Qualcomm Snapdragon 805	
RAM	3GB	3GB	4GB	4GB	3GB	3GB	3GB	
ROM	32GB	32GB	64GB	32GB	32GB	32GB	64GB	
Expandable Storage	No	Yes	No	Yes	Yes	Yes	No	
Battery	2600 mAh	3000 mAh	3300 mAh	3100 mAh	2930 mAh	2840 mAh	3900 mAh	
Rear Camera	16MP	16MP	13MP	13MP	20.7MP	21MP+2.1MP duo	21MP	
Front Camera	5MP	8MP	5MP	5MP	5MP	4MP ultra-pixel	2MP	

### Scoring

	Samsung Galaxy S6 Edge	LG G4	OnePlus 2	Asus Zenfone 2	Sony Xperia Z3+	HTC One M9+	Moto Turbo	
Performance								
AnTuTu	66797	49421	48905	46409	49421	53834	50965	
Geekbench 3 Single Core	1297	1108	1004	919	944	1005	1037	
Geekbench 3 Multi Core	4414	3408	3908	2909	2941	4972	3123	
GFXBench Manhattan	932	396	1351	777	820.7	272	690	
3D Mark Unlimited	21877	18955	18243	19875	16976	17555	13735	
Camera (Normal Light) (out of 5)	4.5	5	4	3.5	4	3	3	
Camera (Low Light) (out of 5)	4.5	5	4	3	4	3	2.5	
Shutter Response (out of 5)	5	5	4	4	3	5	4	
Video Recording (out of 5)	5	5	4.5	3.5	4	3.5	3.5	
Front Camera (out of 5)	4.5	5	4	3.5	4	3	3.5	
Battery Test (in hours)	12.5	9.09	7.1	7.1	5	5.2	16.6	
Overall (out of 100)	91	79	81	70	69	70	71	

### Design (out of 5)

Looks	4.5	3.5	4	3	4	4.5	4	
Build Quality: Materials Used	4	3.5	4	4	4	5	4	
Build Quality: Glass Protection	5	5	5	5	5	5	5	
Build Quality: Button Quality	4	5	5	3.4	5	4.5	5	
Screen Quality: Temperature/Hue	4	5	4	4	4.5	3.5	4	
Screen Quality: Sunlight Visibility	3.5	4.5	4	3.5	3	4	4	
Screen Quality: Colour Accuracy	3.5	4.5	4	4	4.5	3.5	3.5	
Screen Quality: Viewing Angles	4.5	5	4	4.5	3	3	4.5	
Touch performance	5	5	5	5	5	5	5	
Interface design	3.5	3.5	3.5	3.5	3	4	4.5	
Ergonomics	4.5	3.5	4.5	2.5	4	4	5	
Overall (out of 100)	84	85	85	75	2	85	88	

### Features (out of 5)

Processor max clock speed	5	4	4	5	5	5	5	
Processor cores	8	6	8	4	8	8	4	
RAM	3	3	4	4	3	3	3	
Display PPI	577	538	401	403	424	565	565	
Display type	5	3	3	3	3	3	4	
Internal Storage space	32	32	64	32	32	32	64	
Front Camera/Rear Camera (1/1)	2	2	2	2	2	2	2	
Rear Camera resolution (in MP)	16	16	13	13	20	20	20.7	
Expandable Memory (Y/N)	0	1	1	1	1	1	0	
4G (Y/N)	1	1	1	1	1	1	1	
OS	5	5	5	5	5	5	5	
Battery rating (mAh)	2600	3000	3300	3100	2930	2840	3900	
Thinness (mm)	7	9.8	9.9	10.9	6.9	9.6	8.3	
Weight (in gms)	132	155	175	170	144	168	165	
Overall (out of 100)	73	73	80	73	77	76	78	



## CIAL, take a bow!

Cochin international airport in India can now run completely on solar power. Read more here: <http://dgit.in/cialsolarpwr>



## Quiz yourself!

Take up this quiz to find out how much you know about release dates of the best of gadgets <http://dgit.in/reldatequiz>

**Smartphones**

Honor 6 Plus	Xiaomi Mi 4	
5.5 inch FHD IPS	5 inch FHD IPS	
HiSilicon Kirin 925	Qualcomm Snapdragon 801	
3GB	3GB	
32GB	16GB	
Yes	No	
3600 mAh dual-8MP	3100 mAh 13MP	
5MP	8MP	
Honor 6 Plus	Xiaomi Mi 4	Max
42962	44509	70000
895	918	1300
3170	2259	4500
535	715	1400
14316	19628	24000
4.5	4	5
4.5	4	5
3	4.5	5
4	4	5
3.5	3.5	5
6.25	5.5	18
67	65	
4	3.5	5
4	4	5
5	5	5
4.5	5	5
3.5	4	5
3	3.5	5
4	3.5	5
3.5	4	5
5	5	5
3.5	4.5	5
3.5	4.5	5
79	84	
3	5	5
8	4	8
3	3	4
401	441	634
3	3	5
32	16	64
2	2	2
8	13	21
1	0	1
1	1	1
4	4	5
3600	3100	5330
7.5	8.9	5.1
165	149	100
71	62	



Asus Zenfone 2

tion that our cries for compact phones are going to go unheard, a 5.5 inch display based phone doesn't need to be as big as the Zenfone 2. The phone is quite bulky making it the worst in this comparison when it comes to ergonomics.

Another area that the Taiwanese company needs to work on is its camera. The Zenfone 2 would have been a formidable competitor to the OnePlus 2 had it not been for the build and camera. While its camera is respectable and passable, that's the best we can say about it. The good news is that Asus has talked a lot about its pixel-master camera technology and is evidently working on it. So, the next generation of the Zenfone 2 (Zenfone 3?) may have something really good in store.

For now though, the Zenfone 2 gains our admiration, and we would recommend it to sub-20k buyers, but it can't defeat the competitors in this comparison.

## ONEPLUS 2

Perhaps no phone came into the market with more responsibility on its shoulders than this one. From what we've seen of the OnePlus fans at the Digit office, the following borders on fanaticism. On top of that, OnePlus chose the Snapdragon 810, getting its fans worried sick over possibilities of heating.

As you have perhaps read in the review, OnePlus came out with flying colours. There are no heating issues on the OnePlus 2 and OnePlus makes up for the lower clock speed with GPU performance that even beats the Galaxy S6. And that's saying something. In addition, the 1.7GHz octa-core processor deals with your regular tasks effectively. Coupled with the 4GB RAM you get, it's a breeze.



OnePlus 2



## Cortana on a Mac

Now you can access Microsoft's Cortana on a Mac using Parallels 11  
<http://dgit.in/cortanaonmac>



## Voice commands on PC

Thanks to Cortana and Intel, soon you will be able to use voice commands on your PC.  
<http://dgit.in/intelvoicecmd>



Samsung Galaxy S6 Edge

This is accompanied by a much improved camera. The 13MP rear camera has both a laser assisted auto-focus and optical image stabilisation (OIS) this time, giving the OnePlus 2's camera a big boost. While it isn't as fast or as good as the LG G4, it's still really good in its price bracket.

The OnePlus 2 has its weaknesses in a display that has a pretty low refresh rate, and OxygenOS, which is a really buggy UI at the moment. All in all though, the OnePlus 2 is without a doubt our best buy at the moment.

## SAMSUNG GALAXY S6 EDGE

Samsung's sales numbers may be dropping with blows coming

from Apple on one side and Chinese manufacturers on the other, but that doesn't change the fact that the company hit the right chords with the Galaxy S6 and S6 Edge. We used the Galaxy S6 Edge for this comparison, as it's more unique of Samsung's two flagships.

You know how we've criticised the Exynos processors up until now? Well, we can't really do that for the Exynos 7 Octa. Samsung's new processor, built on the 14nm process is an all-out performer. It does heat up a bit, but the performance is undeniably good.

As if that wasn't enough, there's the 16MP camera on the back, beaten only by the LG G4. Samsung has done a really good job with the Galaxy S6's camera,

making it fast enough to shoot still while in a moving car.

In addition, the company finally listened to the consumers, working on its design elements. Of course design and looks are subjective, but Samsung's S6 Edge has our attention. The company has also worked on its UI to make it free of a lot of bloatware.

If it wasn't clear yet, yes, this is the best performer on our list this time.

## MOTOROLA MOTO TURBO

Moving on, as mentioned before, the Moto Turbo is one of three phones in this comparison that belong to an older generation. Even so, the Turbo can still take most flagships today head on and impress you. It doesn't have traditional flagship-like looks, neither does it have the newest specifications in the market. But when it was launched, it was essentially a smaller version

of the Nexus 6, which looked better, felt better, and was just as powerful, if not more.

The Turbo has a 5.2 inch QHD AMOLED display, which in typical AMOLED fashion, is a little yellowish. That said, the display is still quite good, and ranks up there with the best displays in the market today. Combined with a good touch response and Gorilla Glass, it's a really premium display. When it was launched, the Moto Turbo was priced at ₹41,999, a good 10k lower than flagships at the time. Now though, the fact that Motorola has kept its price intact is reducing the value of the phone.

It has a Snapdragon 805 processor, which performs quite well. In fact, the Turbo was the first phone that clocked over 50k on AnTuTu on our database of phones. Of course, it was quickly joined there by the Nexus 6, while the Samsung Galaxy S6 Edge blew the competition out of



Motorola Moto Turbo





## Confused about IoT?

Read all about IoT in infographics here and find out what the hype is all about <http://dgit.in/iothypeg>



## Fossil's Smartwatch

Fossil showcased its Intel powered Android wear device and a number of products <http://dgit.in/fossilandwr>

Smartphones

the water. None of that takes away from the raw power that the Moto Turbo delivers though.

It combined all of that with a ballistic nylon back, which feels really different compared to anything in the market and we liked it. The phone is not heavy enough to be a problem either, in fact, the OnePlus 2 is much heavier. So, even though the Moto Turbo is made essentially of plastic, we quite like the build of this device.

The thickness of the phone has allowed Motorola to fit a 3,900 mAh battery, which on regular usage lasts us a full day without breaking a sweat, even when the screen is turned up to full brightness throughout. As we've said time and again, we would pick battery life over a thin phone any time. Overall, the phone is built like a tank, lasts long and delivers really top class performance. But why is it not our best performer then? Because of its big weakness is in the camera department. The 21MP camera looks good on paper, but it isn't so in reality. It still lags miles behind every phone on this list. The only thing that can be said about the Turbo's camera though is that it's better than any other camera on Motorola phones that sell in India, which is not saying much. If you're not much of a photography enthusiast, you'll get by with the Moto Turbo's camera. Sadly, that doesn't cut it in our comparison of flagship devices.

## XIAOMI MI 4

Two things reduce the value of the Xiaomi Mi 4 right now. One, there's only a 16GB variant available in the market, secondly, the Mi 5 is on its way into the market sometime soon. The 16GB storage space is what rings the death knell for the device.



Xiaomi Mi 4

Nevertheless, the Xiaomi Mi 4 does have a Snapdragon 801 processor, which was perhaps Qualcomm's best processor in the 800 series. It can churn out performance and at ₹14,999 offers really good value. The Snapdragon 801 may not be as powerful as the Exynos 7 Octa, Snapdragon 805 or even the Snapdragon 810, but it makes up for it with its thermal and battery efficiency.

The Mi 4 isn't exactly a battery beast, but it does the job. On our battery test, the 3,100 mAh battery lasted 5.5 hours, which is better than both the HTC One M9+ and the Sony Xperia Z3+. In addition, it has a really good 5 inch FHD display, which does well with colours and feels good to use.

On a personal note, the size of the Mi 4 is almost exactly what we're looking for from our smartphones. In a phablet infested

world, the Mi 4 is one of the few compact devices that can go toe to toe with others.

## BEST PERFORMER: Samsung Galaxy S6 Edge

As mentioned before, the best performer in this comparison is the Samsung Galaxy S6 Edge. In terms of processor performance, the S6 Edge is ahead of the curve, and other elements like design and especially camera, make it the best performing flagship in this comparison. In addition, Samsung has slashed the price to well below what it was launched at.

If you want to buy the absolute best performance flagship that makes no compromise in any area, then the Galaxy S6 Edge is the one to go for. It ticks the right checkmark in terms of specifications and lives up to the spec sheet. Love it or hate it, you

have to agree that Samsung has done a good job with its flagships this time.

## BEST BUY: OnePlus 2

We told you the results of this comparison wouldn't come as a surprise. The self proclaimed flagship killer may not be the amazing phone its predecessor was, but the OnePlus 2 still does what it set out to do. At ₹24,999, you're looking at a phone that has probably given the engineers who built it a lot of sleepless nights. But it paid off, and the OnePlus 2 can take the flagships head on, and even beat them in some aspects.

We wish OnePlus had worked a little more on the design, but hey, it's a tried and tested design with minor key changes. We really liked the OnePlus 2 and in this comparison, it comes out as the best buy without a doubt.

## EDITOR'S PICK: Moto Turbo

This one was tough. The Asus Zenfone 2 came mighty close to being our editor's pick. It lost out to the OnePlus 2 in the best buy department, but we were torn between it and Moto Turbo for the editor's pick. In the end though, the Turbo's superior design and somewhat better performance made us go with it. We must say that there's a huge price difference here, which means if you're looking at sub-25k smartphones and can't get the OnePlus 2, the Zenfone 2 is still your best bet.

For us though, we like our phones ballistic nylon coated and with high level performance. We don't mind compromising in the camera department, which makes the Moto Turbo the perfect choice for us. Wish Motorola would drop the price to 35k though. Come on! It's been almost a year now Moto.

# Bazaar

## THE LATEST PRODUCTS REVIEWED FOR YOU

The Digit Test Centre receives hundreds of products every month. Each of these products is put through a series of tests and is finally given a score. The final score is arrived at after considering a number of factors and evaluating them in terms of features, performance, value for money, build quality, and, in the case of software, even ease of use.

For better understanding of our ratings, here's a quick guide to our overall score

-  **Extremely poor product.**  
Keep away!
-  **Strictly OK.**  
Not recommended
-  **Decent product.**  
Go for it, but there may be better products out there.
-  **Very good product.**  
Highly recommended.
-  **Ground-breaking product.**  
We've never seen anything like it before.  
A definite must buy!

Page **98** ▶  
Asus Zenfone  
Selfie



◀ Page **99**  
HP Spectre  
X360



Page **100** ▶  
MSI Z170A  
Gaming M7



▲ Page **102**  
Intel Core i7 6700K



▲ Page **104**  
TP-Link Archer D9



▲ Page **106**  
RHA T10i

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## Android lawn sculpture

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## Slack 'happy' Bots

Did you know that Slack has a lot more awesome and happy bots than before. <http://digit.in/slackbots>

Bazaar

# OnePlus 2

## The Second Coming

If you were worried about the Snapdragon 810's heating issues, then let us confirm here that OnePlus has dealt with them effectively. The OnePlus 2 goes for a lower clock speed (of 1.7GHz), which means about 30% lesser performance than the max clock. In addition, there's a cooling paste that has been added to allow for 5-10% lower temperatures. As a result, the OnePlus 2 doesn't heat up abnormally. After extended periods of gaming, if you keep the phone down, the paste cools it down really fast too. The lower clock though results in lower benchmarks, which is fine, since the OnePlus 2 handles every task that you can throw at it like a boss.

OnePlus also ticks a spec-sheet checkmark with the laser-assisted auto-focus camera. The 13MP camera on the back though doesn't focus as fast as the laser system on the LG G4. That said, the OnePlus 2 still takes really good pictures, which are better than the OnePlus One. The camera is much improved and does its best in macro shots. This of course is where the laser auto-focus comes in most handy. Images taken by the OnePlus 2 are accurate in terms of colour reproduction and white balance.

Perhaps the only real weakness that the OnePlus 2 had are in its display and UI. The 5.5 inch FHD display is fine on paper, but it's very easy to discern that OnePlus has cut costs here. The display has a low refresh rate, which shows easily sometimes. It is also quite dim and dull.

This is complemented by OxygenOS, which is still quite buggy. The phone froze due to UI glitches on multiple occasions, while we also found our cellular data turned off for no reason on multiple occasions. In addition, some apps never got up and running on the OnePlus 2. On the one hand, the glitchy UI could be a problem, but on the other, it is also a statement. It shows that OxygenOS is still a work in progress and additions will be made



Price  
₹24,999 (64GB)  
₹22,999 (16GB)

wish it was better.

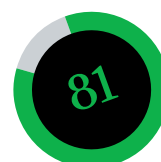
Lastly, the build quality of the OnePlus 2 is quite good, and we daresay different from the OnePlus One. While the Sandstone back is the same as the original, it's on a thin plastic plate this time, which makes it feel rather low grade as compared to the last one. It is also easier to scratch. OnePlus has also added a metal frame, which really serves no purpose except fill another checkbox on the spec sheet. In fact, with the companies Styleswap wood covers, the metal frame feels out of place.

Overall, the OnePlus 2 comes out as quite the performer, but not what the OnePlus One was. It's not the out and out flagship killer that OnePlus launched last year, but a very balanced smartphone that provides very good value for money. If you're buying a new smartphone, then the OnePlus 2 would be a good phone to go for. On the other hand, if you currently have a OnePlus One, then don't ditch that for this one. The OnePlus 2 is an incremental update on the OnePlus One, and not one that qualifies as an 'upgrade'.

Prasid Banerjee

with each new device. We really liked the Shelf screen and the hardware button for changing ringer modes. The fingerprint sensor is not as fast as Apple's, but it does the job.

Another area where the OnePlus 2 is somewhat weak is its battery life. The 3,300 mAh battery can't last you a full day, but does the job in terms of practicality. On a very busy day where the phone was used intensively, we could get it to last for about 10 hours without using the battery saver modes, and with the screen turned up on full brightness. On our battery test, the phone lasted for about seven hours, which is just about fine. So, as mentioned above, the battery is fine for practical purposes, but we



Features ..... 95  
Performance ..... 82  
Design and Build ..... 79  
Value ..... 67

## Specifications

**Display:** 5.5-inch FHD;  
**Battery:** 3,300 mAh;  
**Processor:** 1.7 GHz  
Qualcomm Snapdragon 810 octa-core 64-bit SoC;  
**Camera:** 13 MP rear, 5 MP front; **OS:** OxygenOS 2.0 over Android 5.1.1; **Storage:** 64 GB; **RAM:** 4 GB

## Contact

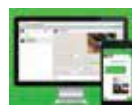
**OnePlus**  
**Email:** support.in@oneplus.net  
**Phone:** 0008008522008  
**Website:** [oneplus.net/in](http://oneplus.net/in)





### Just Beautiful!

If you're bored of your digital clock then this gadget using magnetic ferrofluid is sure to have you excited. <http://dgit.in/ferrofluidisplay>



### WhatsApp Web on iOS

WhatsApp Web is finally available for iOS users after having been an Android only feature for quite some time.

# Asus Zenfone Selfie

Not just self photographs



**T**he Asus Zenfone Selfie is the selfie-special edition of the Asus Zenfone 2 line-up. Typically Zenfone 2 in design, it has an all-glass front, with matte plastic back in a number of colours. The edges are tapered, aiding ergonomics, but the overall size hampers one-handed usage. The large volume buttons at the back feel out-of-place.

The 13-megapixel front camera has a Toshiba T4K37 BSI sensor, 5P Largan lens, f/2.2 aperture and 88-degree wide angle view for panorama selfies. Justifying the tag, the Zenfone Selfie possibly has the best front camera in the market right now. There is a dual-LED flash for low-light situations. The only deterrents are the slight hint of

Price  
₹15,999

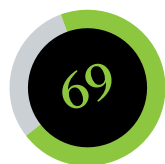


soft focusing and background blurring in overcast and low light conditions. The rear camera uses the same sensor and lens, f/2.0 aperture and laser-assisted autofocus. Image quality from the rear camera is also quite brilliant, although focusing isn't as fast as Asus claims.

Powered by a 1.7 GHz Snapdragon 615 octa-core SoC, 3 GB RAM, Adreno 405 GPU and 32 GB internal storage, it runs on Android Lollipop with Asus' ZenUI and comes with too much bloatware. Performance-wise, it handles regular usage and multitasking without any glitches.

Audio quality is somewhat low key, but apart from that, the Zenfone Selfie is very recommendable for its performance, camera and decent battery life.

Souvik Das



Features .....	69
Performance.....	70
Value .....	65
Design .....	69

### Specifications

**Processor:** Qualcomm Snapdragon 615 1.7 GHz octa-core; **RAM:** 3GB; **GPU:** Adreno 405; **Internal Storage:** 32 GB; **Display:** 5.5" Full HD IPS; **OS:** Android v5.0 (Lollipop); **Battery:** 3000 mAh

### Contact

**Asus India**  
**Phone:** 1800-2090365  
**Email:** NA  
**Website:** [www.asus.com/in/](http://www.asus.com/in/)

# ASRock X99E-ITX/ac

A lesson in eccentricity

**W**hen you think of investing in Intel's Enthusiast platform then you know that you have to go all out from the get go. A huge cabinet, an ATX or perhaps an EATX motherboard, DDR4 RAM, flagship graphics card etc. Basically, you wouldn't consider a mini-ITX motherboard ... or would you? Well, here lies the ASRock X99E-ITX/ac which might just change your mind about the mini-ITX form factor once and for all.

Manufacturers were reluctant to use the compact form factor for the enthusiast platform since it would mean that you'd have to make compromises on a platform whose



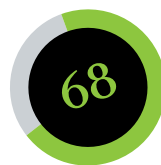
Price  
₹22,500  
(+Tax)

sole mantra was not to make any in the first place. However, you'd want to weigh down the kind of compromises. After all, the X99 platform comes loaded with a plethora of features that each and every adopter might not require make the full use of.

The rear I/O panel has two USB 3.1 ports coupled with four USB 3.0 ports and a welcome addition would be the eSATA port which is something we haven't seen on motherboards for a long time.

Despite the obvious lack of any competition in the mini-ITX form factor, the ASRock X99E-ITX/ac is a really good board. And you really have to give it to them for experimenting in this manner. While, you are missing out on quad-channel and the ability to put together a multi-GPU configuration, they aren't a concern when you want more power from a small form-factor. The ASRock X88E-ITX is your only choice for a compact PC and it hardly feels like you're making a compromise.

Mithun Mobandas



Features .....	61
Build .....	75

### Specifications

**Chipset:** Intel X99; **Memory support:** 4x3200(OC)MHz upto 32GB; **LAN:** 2x Intel Gigabit Ethernet; **Audio:** ALC1150 7.1; **SATA:** 6x SATA III; **Expansion:** 1x PCIe X16; **Dimensions (LxWxD):** 170 mm x 170 mm; **Warranty:** 3 years.

### Contact

**Mediaman Infotech PVT. LTD.**  
**Phone -** 022-43441111,  
**Email -** [sales@mediaman.co.in](mailto:sales@mediaman.co.in),  
**Website -** [www.mediaman.co.in](http://www.mediaman.co.in)



### Yahooo!

Yahoo's updated Weather app will now send you alerts about 15 mins before it starts raining. <http://dgit.in/yahooappwarn>



### Mix it With Mixstix

MixStix, yet another gadget to make you a better bartender, helps you to make better cocktails. <http://dgit.in/cktlmixstix>

Bazaar

# HP Spectre x360

## The best premium ultrabook hybrid?

**A**fter a long time, HP delivers a premium, high-end ultraportable laptop that also duals up as a great hybrid device. Oh yeah. The HP Spectre x360 is every other ultrabook's envy, and its owner's pride. Dressed in an all-aluminium exterior, the Spectre x360 makes heads turn wherever you go with it – inside a corporate boardroom or at your next door coffee shop. Both on its screen lid and bottom panel, the Spectre x360 is flush with matte aluminium finish, and feels much like a MacBook Air – exquisitely high end. Beauty is in the eye of the beholder, but on looks alone, the Spectre x360 sets the bar higher than the Lenovo YOGA 3 Pro – the most direct competitor it has.

All that generous metal exterior doesn't really weigh the Spectre x360 down, as it tips the scale at just 1.5 kg, which is not as light as the 1.3 kg of the Lenovo YOGA 3 Pro, but it's great for a 13-inch form factor ultraportable all the same. Its stainless steel hinges ensure the HP Spectre x360 feels rock solid in every position that it assumes – laptop, tent or tablet mode. The overall build quality of this premium HP hybrid is very good; so is its aesthetic appeal across all orientations.

Sporting a backlit keyboard with keys that are great to type on, the HP Spectre x360's wide touchpad is a joy to use. It's the widest touchpad we've ever seen on a laptop, and it works like a charm – no complaints whatsoever. Even the hybrid's multitouch screen is great to use, with gestures working flawlessly for the most part.

The HP Spectre x360 comes with one of the best set of internal hardware we've seen on an expensive ultrabook or high-end hybrid this year – a Core i7 chip, loads of RAM, dependable onboard graphics and a PCI-e based M.2 SSD. The transfer speeds on the PCI-e SSD are faster than regular SATA-based ones, and that really shows on the HP Spectre x360's performance. Booting up, opening or closing applications, tasks just seem to finish in the blink of an eye, and that's a great feeling to have, especially given the price tag. The device's multimedia potential is very good with nice visuals and encouraging audio performance. Its screen is nice and bright at 232.8 cd/m<sup>2</sup>, and its contrast ratio is good, too. Typing on the screen in tablet mode does put down a lot of fingerprints on the surface but you hardly notice it given the angle at which you view the screen. Multitasking on a number of apps isn't an



Price  
₹1,30,990

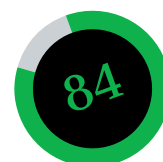
issue on the HP Spectre x360, thanks to its impressive combination of processor, oodles of RAM and superfast SSD. Only thing it can't do? High-end gaming. But then it's not meant for gamers, so we can't really fault it.

What's surprising about the HP Spectre x360 is despite its performance-hungry specs, it still manages to churn out pretty good battery performance. This is a testament to the fact that the PCIe M.2 SSD consumes a lot less power than a traditional hard drive. In our synthetic benchmark at high performance preset, its battery lasted for 3 hours 36 minutes – that's greater than the Lenovo YOGA 3 Pro's. We have no doubt it will sail past the 5 hour mark on a more conservative battery plan, and that's just wonderful.

Another important feature of the Spectre x360 is that it comes with TPM (Trusted Platform Module) for hardware-level encryption, a security feature that its audience will no doubt appreciate, among other things.

This HP Spectre x360 SKU doesn't have as much storage as the Yoga 3 Pro SKU that we'd reviewed earlier and it isn't as light but it has a better processor and onboard graphics combo and a much faster PCI-e SSD. And it's a looker, much like the MacBook Air. In fact, to say that the HP Spectre x360 takes the best of what the Lenovo YOGA 3 Pro and the Apple MacBook Air has to offer would be an apt compliment to its prowess. Highly recommended, go for it.

Jayesh Shinde



Features .....	85
Performance .....	80
Design .....	90
Value .....	80

### Specifications

**Screen:** 13.3-inch, QHD IPS multitouch display, 2560x1440 res; **CPU:** Dual-core Intel Core i7-5500U 2.4 GHz processor; **RAM:** 8 GB DDRIII; **Storage:** 256 GB M.2 SSD; **GPU:** Intel HD 5500; **OS:** 64-bit Windows 8.1 Professional; **I/O:** 3xUSB 3.0, 1xHDMI out, mini-DisplayPort, 3.5 mm headphone jack, SD Card reader; **Wireless:** Wi-Fi 802.11ac, Bluetooth 4.0; **Battery:** 3-cell Li-ion Polymer; **Weight:** 1.48 kg; **Warranty:** 3 years

### Contact

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### Sneak peak

Want to have a sneak peak at Google's secret servers? Here they are: <http://dgit.in/googleseccsvr>



### Discover with Pocket Cast

Pocket Cast now shows you what kind of music people around you are listening to. Read more: <http://dgit.in/pocketcastdscvr>

## Fitbit Charge HR

For the fitness freak in you

The Fitbit Charge HR has a neat, unobtrusive design, sitting elegant on the wrist having a thin OLED strip display with a single button to the left, and an elastomer band that is quite comfortable for extensive wear. The band also has a brushed steel clasp with a rubber interlock, to hold the band in place during exercises and runs.

The Charge HR has an optical heart-rate sensor, 3-axis accelerometer, altimeter, vibration sensor and motion sensor, placed underneath to face the wrist



Price  
₹12,990

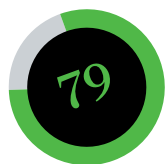


and indicated by two pulsating green LEDs.

The display has six faces for indicating time, steps, heart rate, distance, calories and floors. Additionally, it has a stopwatch, caller ID display on syncing with your phone and a silent alarm feature. The Fitbit app has a very neat user interface and is light on resources, with an easy to use format, detailed display of statistics and there's the whole gamification aspect where you have multiple challenge modes. Through the app you can set up a fitness tally with another Fitbit owner.

The Fitbit Charge HR is very accurate in terms of performance, giving a wide range of raw and computed data including fat burnout threshold, active minutes to resting minutes comparison, daily/weekly/monthly tally to see the fitness graph. We observed that the battery lasts for about six days on full charge, and the only real downsides of this excellent fitness tracker are lack of waterproofing and the extravagant price tag.

Souvik Das



Features .....	87
Performance.....	83
Value .....	64
Design.....	80

### Specifications

**Width of Band:** 21 mm; **Sensors:** Optical heart rate monitor, 3-axis accelerometer, altimeter, motion tracer, vibration motor; **Durability:** Water/Sweat Resistant; **Display:** Monochrome OLED; **Material:** Flexible elastomer band, surgical grade stainless steel buckle; **Charging time:** 1-2 hours; **Operating temperature:** -20 to 45 degrees Celsius; **Maximum operating altitude:** 9144 metres; **App size:** 23.6 MB (iOS), 20.3 MB (Android), 24 MB (Windows)

### Contact

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## MSI Z170A Gaming M7

A good mix of gaming and overclocking features

The Z170A Gaming M7 is one of the top Z170 motherboards that MSI has to offer with quite a few unique features of its own. This board also has metal shields reinforcing the x16 PCIe slots and allows for SLI / CrossFireX without having to worry about heavy graphics cards ripping the slots off the board.

MSI has only one Ethernet port on this high-end board and it has also opted for the Killer E2400 which comes with its own QoS presets. Also, we see that MSI uses Realtek's ALC1150 Codec coupled with dual op-amps, how-



Price  
₹19,999

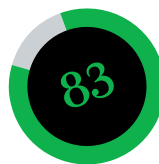
ever, you get Nahimic's software suite to enhance the experience.

The two M.2 ports are both hooked up with x4 PCIe lanes and support RAID to give really high throughput. And if that wasn't enough then MSI includes a RAMDISK software to get exceptional speeds. Also, they've included a one year license for XSplit Gamecaster Premium which costs around \$8.95/mo.

MSI has also paid attention to the board's overclocking capabilities by including features that other manufacturers generally segregate as separate sub-brands. Overclocking using keyboard shortcuts while running Windows and slow-mode are two such features. The rear I/O panel has a Type C and Type A USB 3.1 port which is something we've noticed becoming common with Z170.

MSI's Z170A Gaming M7 is heavily laden with features that focus not only on gaming but also overclocking making it a pretty good motherboard for the price.

Mithun Mobandas



Features .....	86
Build .....	80

### Specifications

**Chipset:** Intel Z170; **Memory support:** 4x3600(OC)MHz upto 64GB; **LAN:** Killer E2400 Gigabit Ethernet; **Audio:** ALC 1150 7.1; **SATA:** 8x SATA III; **Expansion:** 3x PCIe X16(x16+x8+x4); **Dimensions (LxWxD):** 305 mm x 244 mm; **Warranty:** 3 years

### Contact

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### See in 3D!

Intel and Google are striving hard to deliver 3D technology onto your smartphones. <http://digit.in/intlgoogle3d>



### Less Bloatware Now!

Google just decided to decrease the number of Google 'bloatware' apps that come pre-installed on a new phone. <http://digit.in/reducedbloatware>

Bazaar

# Sony KDL-50W950C Android TV

Excellent image, sound quality, but no 4K

**W**hen we received Sony's latest Android TV for review, the fact that it is a 50-inch TV that costs ₹1.3 lacs and does not offer 4K support was playing on our mind. But, as we went through the review process, we realized how Sony's focus with this particular model was about quality rather than the quantity of pixels on offer.

## Android TV Interface

Our first encounter with the Sony Android TV interface was pleasant and somewhat familiar. First up, the home screen offers all the features, apps, movies and games that you can download via the Google play store. The TV comes with 16 GB of storage, out of which you sadly are only left with 8 GB of usable memory to install apps. The interface is clean and offers flat Android 5.0 styled tiles and cards. Clean lines, flat and visually pleasant is the best way to describe the interface. While you can discover and browse through the list of curated and installed apps, the search icon that is almost omnipresent across all menus gives you quick access to the search engine that can look up a specific app or content. And the search works pretty well, especially if you use the voice search option. We used (and preferred) the voice search feature to look for apps and content. All-in-all, the Android TV interface on the Sony Bravia W950C is pretty slick and user friendly, it is generally an easy to master interface while being absolutely comfortable for Android users, who will feel right at home from the very first encounter with the TV.

## Image quality

The Sony TV manages to offer excellent image quality on the 1080p 50-inch panel. The blacks are deep and manage to retain a lot of the details without any signs of ugly grey streaks and blotches. Sony has used a VA panel (which is the case with most Sony TVs) and that surely helps in making the colours 'pop'. Sony has used its TRILUMINOS technology in the W950C series, TRILUMINOS display uses 'Quantum Dots' or semiconductor nanocrystal technology to enhance the colour depth and reduce the over-saturated effect that is commonly associated specifically with large sized VA panel based LED TVs. As a result, while the colours do pop and deliver the impact,

Price  
₹ 1,32,900

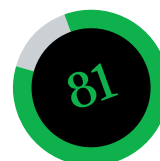


we seldom found the Sony TV to be producing over saturated colours. Contrast is another area where the TV impressed us, thanks to good black levels and a wider colour gamut. Having said that, the panel isn't the brightest around and the view angles are good but not the best. The matte finish on the panel helps a great deal in terms of avoiding reflections and that sort of avoids the need to crank the brightness level to maximum. Being a 60 Hz (native) panel, the TV handles motion well but it isn't in the same league as a 100 Hz native panel and hence isn't ideal if you plan to do a lot of gaming or any other application that goes beyond 50-60 frames per second.

## Sound Quality

The Sony Bravia W950C Android TV offers brilliant out-of-the box sound experience. The sound system consists of dual 20 Watt two-way bottom firing speakers coupled with a sound bar-like woofer that houses two side-firing 10W + 10W bass drivers. These work wonderfully together to deliver a satisfying aural experience that you'd generally not expect from TVs. Unless you are planning to setup (and spend on) a professional grade home theatre system with this Sony Android TV, you won't need to buy a separate sound system to go with the TV.

Sobam Raninga



Features.....	76
Performance.....	87
Value .....	71
Design .....	82

## Specifications

**Display:** 49.5-inch VA panel with 1920 x 1080p native resolution; **Panel backlight:** Edge-lit LED panel with frame dimming; **3D:** Yes, supports active 3D, does not ship with 3D glasses; **Smart TV OS:** Google Android TV; **Audio Output Power:** 40 W, **HDMI Connections:** 4; **Wireless connectivity:** Wi-Fi & Bluetooth; **Ethernet port:** Yes, **USB ports:** 2x USB 2.0 ports; Touch Pad remote is optional for ₹2,999

## Contact

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**Test it!**

iPhone users can now 'Test drive' Samsung's new phones for 30 days for just \$1.  
<http://dgit.in/testsmsngphone>

**Go retro!**

Go retro with this app, which gives a 1985 camcorder feel while recording on an iOS device. Check it out: <http://dgit.in/ioscmcrdrapp>

# Intel Core i7-6700K

## Skylake makes a splash



Let's get the whole Tick-Tock bit out of the way. Skylake is the successor to Broadwell which was released just a few months back. It's what Intel describes as a "tock" or an improvement in the microarchitecture design. Ideally, followed by a "Tick" that shrinks the design, Intel will opt for another tock since the 10nm manufacturing process is taking a little more time to mature. Along with the Core i7 6700K, Intel has decided to release just one other SKU, i.e. the Core i5 6600K with more to come later this year.

The Core i7 6700K is clocked at 4.0 GHz with a turbo clock that pushes it to a meagre 4.5 GHz. In comparison, the Core i5 6600K ends up with a much higher performance delta. Compared to Broadwell and Devil's Canyon, this new architecture doesn't really push the envelope. Generally, we're used to seeing increments of around 9-11 per cent between generations but with the gap between Intel's releases narrowing with each year, this kind of behaviour was expected.

Skylake also comes with a brand new socket – The LGA 1151. And this makes it incompatible with previous generation of motherboards i.e. the 87-series and 97-series. This isn't just because of the extra pin but for the fact that Intel decided to take out the voltage regulator off the die and back into the hands of motherboard manufacturers. FIVR (Fully Integrated Voltage Regulator) was intro-

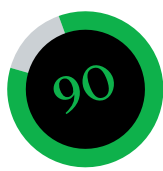
duced to give the user a much finer control over the CPU voltage. If you've ever looked at a motherboard then the huge metal heatsinks around the processor are basically there to cool down the voltage regulator circuitry. Imagine the effect of putting this on the CPU die. Yes, it led to more heating when users had to overclock the CPU.

Reducing the manufacturing process down to the 14nm FinFET process also reduces the voltage level required to drive the circuitry, which means that Skylake gets DDR4 support. Also, since DDR3L (L-Low Power) runs at 1.35 volts which is quite close to the processor's 1.2 volts, it too will be compatible. DDR4's high cost might put off a lot of enthusiasts and lead them to opt for DDR3L supported motherboards. This incurs a performance drop if the DDR3L is to be slower than 1866 MHz and the ironic thing about these SKUs are that they cost pretty much the same as DDR4 DIMMs clocked at 2133 MHz so you might as well opt for DDR4 running at close to native speeds.

The integrated GPU with Skylake has undergone a change in nomenclature with Intel having ditched the 4-digit system for a 3-digit one. The IGP on the Core i7 6700K is called HD Graphics 530 and sports 24 Execution Units clocked at 350 MHz on idle while taking it all the way up to 1150 MHz on turbo. Performance wise, it can deliver about 40 FPS in current games like Bioshock Infinite which puts it at par with the AMD R7 240.

Performance wise, Skylake's Core i7 6700K ends up being slightly greater than Devil's Canyon (Core i7 4790K). This increment of 4-5 per cent can barely justify upgrading your PC and this has been the tale for quite a while. Which makes one wonder who'd best benefit from upgrading to Skylake, well if you happen to have a 4770K or a 3770K or even a 2600K then you might want to wait another year. Sandy Bridge is sort of where you can draw the line, the performance increment over Sandy Bridge and the bevy of new features that the Z170 chip brings to the table makes it a considerable upgrade. Prime among these would be M.2 and SATA Express with native NVMe support. We've already seen motherboards on which you can easily obtain data transfer speeds of over 3300 MB/s using three M.2 SSDs in RAID. What makes an upgrade even more enticing is that you can still get a decent resale value for your old Sandy Bridge PC.

Mithun Mobandas



Performance..... 90

**Specifications**

**Clock speed:** 4.0 GHz, 4.5 GHz on Turbo; **Cache:** 8 MB; **Cores:** 4; **Threads:** 8; **Manufacturing process:** 14 nm FinFET; **TDP:** 91W; **IGP:** HD Graphics 530; **IGP Clock Speed:** 350 MHz, 1150 MHz on Turbo; **Memory:** Dual Channel DDR4 or DDR3L; **PCIe Lanes:** 16 ver 3.0; **Socket:** LGA 1151

**Contact**

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## Customize Windows Explorer

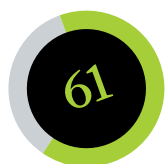
Is your explorer on the new Windows 10 too messy? Learn how to customize and edit it to your liking. <http://dgit.in/cstmzeexplorer>



## After Popcorn time, Jail-time?

Who knew you could get arrested for spreading information about the Popcorn time? Check it here: <http://dgit.in/popcrntmearrst>

Bazaar



# Acer Aspire E3-112M

Tiny, ultraportable, but sluggish

Features .....55  
Performance.....55  
Value .....70  
Design.....65

## Specifications

**Screen:** Matte, 11.6-inch, 1366x768, LCD; **CPU:** 2.16 GHz Intel Celeron N2840; **RAM:** 2 GB; **HDD:** 500 GB; **GPU:** Intel HD Graphics; **Connectivity:** 1xUSB 2.0, 1xUSB 3.0, 1xHDMI, 1xEthernet, 3.5 mm audio jack, SD Card slot; **OS:** 64-bit Win 8.1; **Webcam:** HD; **Weight:** 1.29 kg

## Contact

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**Website:** [www.acer.co.in](http://www.acer.co.in)

As far as 11-inch ultraportable goes, the Acer Aspire E3 112M is a fine example of the species. Its all-plastic shell is quite thin and the whole thing only weighs about 1.3 kg – a true featherweight of the laptop world! It can easily disappear inside a backpack or a medium-sized hand purse without anyone's notice. Trudging the slim Acer notebook is no problem whatsoever, and its construction or build quality isn't bad either – it does dip on the keyboard deck and its screen vibrates a bit too much while typing, but they're nowhere close to a deal breaker.

More than its chiclet-sized keys, we like the Aspire E3's large and wide touchpad. Its matte screen is a breath of fresh air to use, not suffering



Price  
₹18,038  
(+Tax)

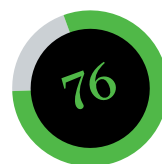
from reflection issues that plague most glossy screens on laptop these days. And its battery life is quite spectacular, we clocked over 5 hours 30 minutes on our benchmark, which easily translates to over 8-9 hours on a conservative power plan.

What we didn't like on the Aspire E3 is all the preloaded software that slows down an already humble performer. Multitasking beyond two apps easily slows down this machine, and speed is clearly not its forte. If anyone should be buying this machine then it should be for its ultraportability and very good battery life.

Jayesh Shinde

# Canon EOS 750D

A good mid-range DSLR



The Canon EOS 750D is the successor to the popular mid-range favourite – the Canon 700D. It has a number of functional upgrades over its predecessor - take the largely efficient 270-degree swivelling LCD screen for instance.

The EOS 750D has a more upright designing than the 700D, with curved body edges that aid grip and usability. Despite the smaller polycarbonate body weighing 525 g, there is no compromise on hand grip. It features a 24.2-megapixel CMOS sensor with Canon's Digic 6 image processor and a 7-column, 19-point phase detection autofocus mechanism, which functions smoothly. The anti-aliasing filter built into the camera makes crisp focusing slightly tricky, in the process of reducing image noise.



Price  
₹49,720

It makes a perfect DSLR for beginners with slightly deeper pockets than the average guy. The built in Wi-Fi and NFC really sets it apart. The pentaprism viewfinder covers 95% of the image area, and in Live View, the Clear View II touch LCD supports one-touch capture and focus tracing with fingers. In burst mode, shooting in RAW provides 8 shots, while standard JPEG supports up to 940 shots. The EOS 750D has an 11-stop dynamic range, which hinders silhouette shooting. Canon has added a multi-exposure HDR mode, although that cannot be used without a stand. Overall, the Canon EOS 750D is a good mid-range DSLR, although the Nikon D5500 makes a better buy for a few extra grands.

Souvik Das

Features .....70  
Performance.....78  
Design .....75  
Value .....80

## Specifications

**Sensor:** 24.2MP APS-C CMOS; **Processor:** Canon Digic 6; **Shutter Speed range:** 1/4000 to 30 sec; **ISO:** 100-12800; **AF points:** 19, Phase Detection; **Max Resolution:** 6000 x 4000 pixels; **Mount:** Canon EF, EF-S; **Display:** 3-inch Vari-angle Touch Panel

## Contact

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# ASRock Z170 Extreme7+

Giving you more flexibility with your Skylake configuration

**A**SRock too sent us their top Z170 board and it hops ahead of the competition by not only providing the same set of features as the competition but by giving you more of each feature to afford the user greater flexibility with their Skylake configuration.

For starters, you have three M.2 slots, each of which is an x4 PCIe slot so RAID speeds easily hit 3400 MB/s. You not only get three M.2 ports but also three SATA Express ports. Now, all the other Z170 boards have USB 3.1 Type C connectors on the rear but



Price  
₹21,499  
(Approx.)

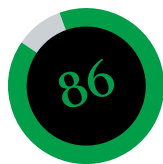
ASRock has provided a 3.5-inch drive bay adapter to bring the two USB 3.1 ports to the front which is something that cabinet manufacturers are yet to provide.

While we did see Giga-byte's board with two GbE ports, they didn't support Teaming but the Killer E2400 port had configurable QoS settings. The ASRock Z170 Extreme7+ not only has Teaming because both ports are Intel GbE but you get a free license for cFosSpeed which has QoS settings of its own as well. Moreover, one of the GbE ports happens to be the latest from Intel that supports Intel V-Pro.

When it comes to audio, ASRock went with Realtek's ALC1150 channelled through an aftermarket op-amp and isolated circuitry which they call Purity Sound 3.

ASRock has really pushed the envelope with the Z170 Extreme7+ and the board is part of its launch lineup, which makes us wonder what else ASRock has in store with its future SKUs.

Mithun Mobandas



Features .....93  
Build .....79

## Specifications

**Chipset:** Intel Z170; **Memory support:** 4x3600(OC)MHz upto 64GB; **LAN:** Intel I211-AT + I219-V Gigabit Ethernet; **Audio:** ALC1150 7.1; **SATA:** 10x SATA III; **Expansion:** 4x PCIe X16(x16+x8+x8+x4); **Dimensions (LxWxD):** 305 mm x 244 mm; **Warranty:** 3 years.

## Contact

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# TP-Link Archer D9 Router

Value for money in the enthusiast segment

**W**ith AC1900 routers being the sweet spot currently in terms of performance and affordability there are quite a few options to choose from and TP-Link's Archer D9 is the latest entrant in that pool with a significant price difference, especially for an ADSL router which tend to cost a little more than non-ADSL models. The question arises as to what gives it this economical advantage.

For starters, the router weighs a lot less than its counterparts but runs on the same BCM4709 as they all do. Secondly, a lot of the expensive routers tend to have a much more polished user interface while the Archer D9 sticks



Price  
₹13,999

to what you find in its budget segment routers.

Not that there's anything wrong with it, it's just that such UI are more preferred by enthusiasts and can be a bit cumbersome for first timers. The Archer D9 is designed without any wall mount holes in the rear but you can always flip it upside down and use the stand as a wall mount with a slight reorientation of the antennae to compensate for the awkward positioning.

The router's performance isn't affected by the price cut with what we observed, though the effects of sustained high throughput performance over long periods of time is something that we didn't have the time to figure out. And transfer rates for the USB 3.0 port on the rear was a little lesser than what we've seen in competing routers. However, given its pricing there isn't any other router than can provide the same level of performance and the UI is something you only fiddle with once in a blue moon. These factors explain the Archer D9's pricing.

Mithun Mobandas



Performance.....79  
Features .....68  
Build Quality .....75

## Specifications

**Wireless LAN Chip:** Broadcom BCM4709; **Memory:** 128 MB; **Protocols:** 802.11ac; **Bandwidth:** 1900(1300@5GHz+600@2.4GHz) Mbps; **Ethernet:** 4x LAN GbE, 1x RJ-11 Ports; **USB:** 1x USB 2.0, 1x USB 3.0; **Warranty:** 3 years

## Contact

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**Website:** [www.tp-link.in](http://www.tp-link.in)



### New selfie device?

This amazing new device just made selfie sticks obsolete. Check it here: <http://dgit.in/nxtslfiedvce>



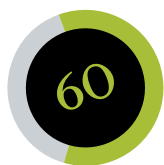
### #AddLasersToPaleoart

Can anything on the internet ever go extinct? Paleoart won't let it. Learn more here: <http://dgit.in/paleoartht>

Bazaar

# Toshiba Canvio Connect II 1 TB

Moving data between Mac and PC made easy



Performance..... 50

Features ..... 70

## Specifications

**Model:** MQ01UBD100;  
**Capacity:** 1 TB; **Interface:** USB 3.0; **Colour:** Satin Gold; **RPM:** 5400;  
**Dimensions:** 109 x 78 x 14 mm; **Weight:** 165 g;  
**Warranty:** 3 Years

## Contact

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**Website:** [rptechindia.com](http://rptechindia.com)

With an ample amount of brands to choose from when it comes to expanding your portable storage capacity, today's buyers are more focussed on getting the best of both worlds – speed and capacity. The Canvio Connect II is yet another offering from Toshiba that aims to offer both. To avoid the hassle of having to buy a Mac specific hard drive that comes pre-formatted as NFS+, quite a few manufacturers have started offering NTFS drivers for those who wish to use portable drives interchangeably between PC and Mac systems. Toshiba makes use of Tuxera's NTFS driver which would have otherwise cost the you a good ₹1,600.

The device sports a very clean look with an activity LED in one corner. The underside has a



Price  
₹4,899

different finish than the rest of the drive and it comes with rubber feet for some good padding. And the included cable is nothing special. When it comes to performance, the Toshiba HDD on the inside does a fairly good job if you're going to be handling a lot of sequential data. But the moment you add a little random magic to the mix, the speeds drop quite a bit. The drops were reflected in our real world tests rather than the common benchmark suites. In

CrystalDiskMark, the only noticeable drop was when writing random data onto the disk, reading the same back again was quick enough to be categorised as average. We recorded transfer speeds of around 116 MB/s for sequential data for both, read and write speeds.

Mitbun Mobandas

# Yu Fit smartband

All talk, no play

The Yu Fit promised to do more than the Xiaomi Mi Band but at the same price. Alas, we were disappointed. It turned out to be really inaccurate.

While comparing it with a Fitbit is unfair, even when compared to the Mi Band, the Yu Fit gets a lot wrong. The band showed us 3,000 steps taken, when we had barely taken 600 steps at most.

The good thing though is that you get access to a coach, which means there is a human expert on the other end who can help you. So, even though the band itself is inaccurate, you can take advantage of the coach and the feedback he or she provides.

That said, the ₹999 price tag isn't really right then, since you'll have to pay extra for getting

access to the coach. So, if you want to buy a fitness band that costs less than ₹1,000, the Mi Band is the one to go for. If you use the Yu Fit as a standalone device, you're not exactly going to get a lot out of it, since the sensor data can hardly be considered trustworthy.

In addition, the HealthifyMe support was also somewhat disappointing. While that's the app that gives you the coach, its information seems questionable. On one occasion, the app showed that we had burned 15,000 calories after 3 hours of cycling (that's enough to send you to the hospital), while a more specialised cycling equipment showed only about 2,000 calories burnt much to our relief.

Prasid Banerjee



Price  
₹999  
(+extra for the coach)



Design ..... 60

App ..... 79

Performance ..... 60

Value ..... 32

## Specifications

**Display:** Yes, OLED;  
**Compatibility:** Android;  
**Connectivity:** Bluetooth;  
**Water Resistance:** Yes, but don't take it for a swim

## Contact

**Yu Play God**  
**Phone:** 1800 3000 9009  
**Email:** NA  
**Website:** [yuplaygod.com](http://yuplaygod.com)



### Now, Force touch it!

Is saving your time by using Apple's Force Touch the newest feature across devices? Read it here: <http://digit.in/iosfrctech>



### Click it Right

Tired of those retakes and poor and noisy image output in low light conditions? Use these tips to get it right: <http://digit.in/lowlightclktips>

# ASUS RT-AC3200 Wireless Router

More bandwidth than you'd need

There are very few routers to pick from when you want the very best in terms of high throughput and a user friendly UI and the ASUS RT-AC3200 is one such router. Based on the same Broadcom BCM4709A0 SoC as all other enthusiast routers, this router makes use of three bands to achieve the overall throughput. With each flagship product from all manufacturers seeming to be of alien origin, ASUS has decided to stick with an older design which is very similar to its own RT-AC87U but with six antennae instead of four. On the inside, we see huge heatsinks covering the radios



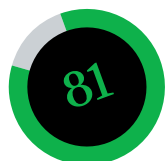
Price  
₹25,000

with plenty of tall fins all over the surface. In comparison, the D-Link 890L had a lot more metal in the heatsink but sported fewer fins overall.

When it comes to performance, the RT-AC3200 goes neck and neck with the DIR-890L with the former exhibiting better wireless throughput and the latter having greater throughput via wired connections. But when you look at the interface there is a stark difference, ASUS has stuck with their old UI that is all too familiar but D-Link's more simplified UI might end up being more appealing to mainstream users.

We ran the tests with the Smart Connect feature disabled since we noticed that the connection did hop a little too often leading to incomplete test runs. The workings of the feature warrants a closer inspection. Overall, we'd say that the RT-AC3200 ends up coming a little behind the DIR-890L in terms of performance but has a more familiar user interface which adds to its charm. The router is being sold in India exclusively on Amazon.in.

Mithun Mobandas



Performance.....	88
Value .....	70
Build .....	85

### Specifications

**Wireless LAN Chip:** Broadcom BCM4709A0; **Memory:** 128 MB; **Protocols:** 802.11ac; **Bandwidth:** 3200 (1300@5GHz + 1300@5GHz + 600@2.4GHz) Mbps; **Ethernet:** 4x LAN, 1x WAN, GbE Ports; **USB:** 1x USB 2.0, 1x USB 3.0; **Warranty:** 3 years

### Contact

**ASUS Technology Pvt. Ltd.**  
**Phone:** 18002090365,  
**Email:** reachus@asus.com,  
**Website:** <http://www.asus.in/>

# RHA T10i

A bloody good gimmick this is

The RHA T10i is one of the most unique headphones I've ever had the pleasure of reviewing. The build quality is top notch and the housing is made of pure stainless steel, crafted to a truly ergonomic shape. It is the heaviest I've ever seen but that wasn't an issue at all. The RHA T10i just slips into the curves of your ear with ease. The cable, being rubberised, there's almost no chord harmonics. And lastly, there's spring shielding at the bend near the 3.5 mm jack.

So why 'gimmicky'? Well the RHA T10i is, for the lack of a better word, highly customisable. With three tuning filters, you can change the sound signature between neutral,



Price  
₹14,999

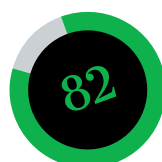
bass and treble. They alter the frequency response by a max of +3 dB below 200 Hz and +3 dB above 1 kHz respectively. With 10 sets of tips plus the three tuning filters, there's a hell of a lot of permutations and combinations you can achieve.

So do the filters work? Yes. That's not the gimmick. The gimmick is the idea that you'll go through the effort of switching filters for listening to different genres of music. You'll most likely, like me, stick to the neutral filter and employ a DSP to add any colouration to the sound.

For drawing references I had with me my trusty old Bose QC20 along with the Cowon EH2 (which is priced similarly) and the higher end UE 900. Comfort, precision, was a shade above the EH2, while the build quality was significantly better. Thanks to the interchangeable tuning filters the RHA T10i raked up a few points in the features department as well. Isolation is brilliant.

They are pair of beautiful sounding, well constructed, and very unique headphones. Whether they're going to be part of your larger collection, or your primary listening device – you need to have them. Period.

Siddharth Parwatay



Features .....	86
Performance.....	85
Value .....	72
Build .....	86

### Specifications

**Frequency Response:** 16 - 22000 Hz; **Impedance:** 16 Ohms; **Cable Type:** 1.35 m Reinforced OFC Cable; **Plug Type:** 3.5 mm Gold Plated Jack; **Magnet:** Neodymium; **Sensitivity:** 100 dB @ 1 kHz; **Weight:** 41 g

### Contact

**Headphonezone**  
**Phone:** +91 7506646988  
**Email:** direct@headphonezone.in  
**Website:** [www.headphonezone.in](http://www.headphonezone.in)





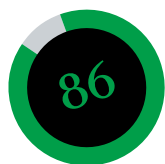
## Facebook News, Soon?

Facebook, is reportedly working on a news app which will offer you on-the-go news content. Read more here: <http://dgit.in/fbnewssoon>

## The future of 3D is here!

Finally a display which can give us 3D pictures without having to wear specialised 3D glasses! <http://dgit.in/new3ddsply>

Bazaar



Features ..... 91  
Build ..... 80

### Specifications

**Chipset:** Intel Z170;  
**Memory support:** 4x3866(OC)MHz upto 64GB; **LAN:** Intel + Killer E2400 Gigabit Ethernet; **Audio:** Creative Sound Core 3D; **SATA:** 8x SATA III; **Expansion:** 3x PCIe X16(x16+x8+x4); **Dimensions (LxWxD):** 305 mm x 244 mm; **Warranty:** 3 years

### Contact

**Gigabyte Technology (India) Pvt. Ltd.,**  
**Phone -** 022-40633222,  
**Email -** sales@gigabyte.in,  
**Website -** www.gigabyte.in

# Gigabyte GA-Z170X Gaming 7

One of the best Z170 boards you can get

**A**mong Gigabyte's arsenal of Z170 motherboards, there are very few that can match the feature set that the GA-Z170X Gaming 7 sports. Gigabyte has gone all out to up the ante on build quality with metal shielding on all PCIe x16 slots which helps with the more heavy graphics cards that are becoming more and more mainstream. Then comes the rigid housing protecting the rear I/O connectors. Speaking of which, most of the sockets in the rear I/O panel happen to be gold plated which helps avoid corrosion.

The GA-Z170X Gaming 7 features the latest Killer E2400 Ethernet chip along with an Intel GbE. It also features Intel's USB 3.1 controller through which you get one Type A connector and a



Price  
₹22,000

Type C connector. With a Creative Sound Core 3D CODEC and the ability to swap out OP-AMPs, the user not only gets a better audio capabilities but can also customise the sound signature to his/her liking.

If you haven't been keeping up with the advances in the storage segment then NVMe M.2 SSDs have finally arrived and this board has two M.2

connectors, both of which use x4 PCIe lanes allowing for throughput of 32Gbps. What's even better is that you can configure RAID on these slots, giving you speeds you could only have dreamed of till now.

The GA-Z170X-Gaming 7 may be a bit on the pricier side of Z170 boards but it justifies the price with great build quality and a bountiful feature set.

Mithun Mobandas

# Leadtek Quadro K420

Optimal for very specific scenarios

**W**hile workstation cards might not be something you'd have expected to see on one of these pages but there's a first time for everything. NVIDIA's

QUADRO K420 happens to be a very economical workstation card for some very specific applications. While improved drivers and the Maxwell architecture has narrowed down the gap between workstation and gaming graphics cards there are still certain applications that fare well only on these.

The advantage that these QUADRO cards have over GTX cards are that more attention is paid towards the drivers with multiple versions being released that are certified to function optimally with CAD software. The underlying GPU in the K420 is the GK107 which is the same as the GTX 630 (2012) but the K420 is clocked at a

significantly higher speed giving it a much higher single precision and double precision throughput. We took something recent, i.e. the GTX 750 Ti and compared it to the K420 since they're both in the same price segment. We found that the

GTX 750 Ti had a clear advantage in most industrial CAD benchmarks except for a few like Siemen's NX and PTC's Creo 2.0.

We are more curious to see how the K420 would perform in a similar situation since it's more recent and runs on the same GM107 GPU that the GTX 750 Ti does.

With the K420, it would be advisable to figure out which CAD application you wish to run primarily before deciding between a gaming graphics card or a workstation card based on the same architecture.



Price  
₹13,500



Performance..... 64  
Value ..... 60  
Build ..... 60

### Specifications

**Chipset:** GK107; **Base clock:** 876 MHz; **Memory clock:** 891 MHz; **Stream processors:** 192; **Texture Units:** 16; **ROPs:** 16; **Single Precision:** 299.52 GFLOPS; **Double Precision:** 12.48 GFLOPS; **Memory:** 1 GB; **DirectX support:** 11.2; **OpenGL support:** 4.5; **Power Connectors:** None; **TDP:** 41 W; **Warranty:** 3 years

### Contact

**Rashi Peripherals Pvt. Ltd.**  
**Phone:** 022-61771771  
**Email:** contactus@rptechindia.com  
**Website:** www.rptechindia.com

Mithun Mobandas

**Price watch**

Are you planning on buying a smart band, a pair of IEMs or a 4K television? Check out our recommendations.

**Killer Rigs**

You don't have to fuss around with multiple PC configurations for different budgets because we do it for you.

# Beautify your phone

**Agent 001 goes hunting for smartphone customisation options.**

Agent 001  
agent001@digit.in

Well, smartphones are something no one can live without in the current day and age and it's a known fact that we spend more time tapping away endlessly on our screens than is necessary at times. Since we devote so much time to our smart devices, it's quite easy to get bored with their look and feel after having used them for long. This is one of the scenarios where customisation comes into the picture. I was pondering over this very thought looking at my trusty Nexus 4 (Yes, I still have one apart from my daily driver) inside a rickshaw that was meandering pot-holed roads in Mumbai monsoons to a place where I was supposed to meet an old friend. This Nexus 4 wasn't protected by a case, skin or wrap of any kind and this was the case ever since I had purchased it over two years ago. But lately, I've been thinking that I should do something about it. Not because I have important data but for the very fact that it's starting to appear quite stale.

The rickshaw came to an abrupt halt as I had arrived at my destination and I entered the restaurant to find my friend sitting there enjoying what he had ordered. On seeing me, he got up to greet me and midway, as the clumsy person he is known to be since our college days, he drops his phone straight onto the restaurant's hard flooring. His jaw probably hit the floor before his phone but he recovered quickly and picked it up to see if it was alright. Unfortunately for him, his Moto X got a bad dent on one of its corners but he was darn lucky that the screen was unharmed. After all, the MOTO X's screen



is quite expensive to replace. He looked at me, sighed in relief and said "I should definitely get a case of some sort because I keep dropping my phone". To which I said: "Yes, you definitely need to, I wonder how that phone has survived this long. But you know what? Since your birthday is coming up next month, let me gift you a nice case. What say?". He looked sheepishly at me, nodded and said "Alright! But don't get me one of those blingy fake diamond studded ones okay?".

Later that night, I came back home and started looking at ways to customise the appearance. I must say that there were far too many different options available in that regard but from what I saw, most of them offered a flimsy plastic case to protect the back of your phone and in most cases there was some design or image on the back. I prefer not to go for thick cases since they add too much bulk to the phone than I'm comfortable with. I tried searching for other ways that can add more flair to my phone and stumbled on a beautifully made website called dbrand.com. As it turns out, the guys at dbrand are known the world over for manufacturing the most precisely fitting skins for smartphones and other devices. Looking at the different skins they had for sale, I was sold in minutes. They offer skins of different colours with textures like carbon fibre, matte, metal, leather, true colour and wood as well. These skins are merely good quality 3M backed stickers

with textures that feel like the real material on them for your devices, and they offer a great way to customise your device without adding bulk. Although dbrand is a Canadian company, they ship worldwide for a nominal fee and it takes around two weeks for their products to be shipped to India. I selected the Black carbon fibre skin for my Nexus 4 with the Nexus cutout at the back since it looked classy and professional. While I was still on their website, I saw skins for the PS4 and impulsively bought one for my console as well.

Now, I had to search for a heavy duty case for my friend's Moto X 2<sup>nd</sup> Gen. This is why, all those regular plastic cases were out of the picture. I remember seeing a few phone covers online that were made of two materials and merged into one for added protection. A quick search showed that heavy duty cases by Otterbox and Amzer were really good for protecting your phone. Otterbox offered a hybrid option from their Defender series which was really well made but was expensive and shipping here was on the costlier side. This is why, I selected the Amzer Hybrid Kickstand case for my friend's Motorola Moto X (2nd Gen) and I got it for ₹800 from Amzer's Indian web page. This hybrid case offered a lot of protection for the phone and was built like a tank which was exactly what my friend needed.


Since Raksha Bandhan was right around the corner, I contemplated buying



## Win95 is 20 years old

One of Microsoft's most popular Operating Systems just turned 20 years old. <http://dgit.in/ScoreFor95>



Agent 001

one as a present for my cousin sister as well. Suffice to say, her iPhone 6 will soon be a lot more thicker and safer soon. Now this search was all about getting a case that was colourful and tough. After going through around a dozen different websites, I decided to select one from dailyobjects.com. These guys provide more than a boat load of options in their pre-made case section and you can also select the 'customise yourself' option just in case you want to add that personal touch. I selected their 'Minions in The Big Bang Theory' colours case as my sister happens to be a fan of both. They also give you an option to select between slim or tough case material for your order which is a nice addition. While I was hunting for cases, I chanced upon this website called colorware.com which sells devices that are already customised beautifully by them and also provide you with the ability to heavily customise the device yourself. This is quite an interesting concept and if you have deep pockets and an inclination towards say the Venom special edition of iPhone 6 or a 24K Rose Gold Xbox One, you should check them out. 

## Gaming Laptop wanted

Hi Team Digi! I am a heavily desktop dependent user as I find laptops really restricting and I have always avoided using them, if I can. Unfortunately, I'll have to buy a laptop now that I am going abroad for higher education. I play a lot of games on my desktop and I want the laptop that can play current and upcoming games with ease. I don't intend to roam around much with the laptop so I don't mind if the device is bulky. My budget for the laptop is between ₹70,000 to ₹80,000. A few of my friends have recommended me different models from ASUS, MSI and Lenovo. But I'm really confused about which brand or model to go for as I have absolutely no problems in buying a laptop from any of these brands as long as the specifications translate into good performance. Please suggest a good gaming laptop in this budget. Thank you very much.

— Yash Amrohi

 Hi Yash. We understand how moving from being a regular desktop user to a laptop user can be difficult and we sympathize with you in that respect. As for buying a new gaming laptop, your allotted budget for the same can fetch you quite a decent machine. Yes, all manufacturers including Lenovo, ASUS etc. have some offering that suits this budget but let's get you the best gaming machine for your money. Lenovo's popular Y50-70 is a really good option to consider as you get a solid GPU i.e., the GTX 860M in it and you should be able to run current games at medium to high settings. You also have an option of going for the ASUS GL552JX-CN009H from their ROG series as it comes with similarly good hardware with the Intel Core i7 4720HQ coupled with a GTX 950M GPU. The Lenovo does exceed your budget by a meagre amount with a price tag of ₹83K while the ASUS one is available for ₹80K. Both options are really good and you won't be disappointed with whatever you select. 

# STUDYING AT RUBIKA SUPINFOGAME

*The college started with a single course on offer, Game Design, and since 2013 has 2 more on offer - Game Art and Game Programming.*

Since the implementation of the 2 new courses, Game Design students have been able to focus on more technical aspects of their syllabus and give their attention to exploration/ implementation of each aspect within the game engine itself. With this, Rubika Supinfo game is able to offer a more specialized course structure for level design, project management and other in-depth game design topics - balancing, pacing, level implementation, documentation and many more.

Assignments are categorized as follow - one-day (submission on same or next day), one-week (5-day submission, labs open 24/7), two-week (12-day submission, labs open 24/7 through sat/sun), long-term (between 3 weeks and 5 months to submission, regular schedule) and semester-long or year-long (self-explanatory). Year-long projects are compulsory for final year students, but are sometimes taken up by students of other classes outside of curriculum. The passing mark is 60%, for both individual and group projects, which sets the bar of performance to almost double of the average requirement.

Every subject within Ludology, the study of games, is made increasingly easy to grasp through the availability of games and gaming systems to students in addition to really powerful personal computers assigned to each student. Moreover, courses and master-classes are available as part of the syllabus, and they include creative writing, film theory, sound design,

The advantage are manifold:

- Students get to build a profitable network around them which not only includes their classmates, but also the trainers themselves as well as industry greats.
- Students get accustomed to functioning like the typical gaming industry workplace.
- Students learn to handle real-world situations by completing projects like they would if they were working for a corporation. and
- Trainers who are the best at their individual professions get to impart their skills and training on the young minds, while also providing them their best mentorship and career advice.

At the end of Year 1 through Year 3, students are encouraged to pursue summer internships although these aren't compulsory. Internships at the end of Year 4 and 5 are compulsory, however, and offer opportunities toward securing future employment.

For more visit [www.dsk.digit.in](http://www.dsk.digit.in).







### iCloud has it all!

Now you can finally restore your deleted or lost contacts, calendar, files etc from the iCloud. Read more: <http://dgit.in/icldrestore>



### Snap-Dragon' 820!

Get ready with better photo quality and 40 per cent better graphics on your phone, says Snapdragon. <http://dgit.in/snapdragncam>

# SPEND SMART

Go high on entertainment this month with our selection of 4K TVs and IEMs while also staying fit using smart fitness bands to keep track of your daily activities.



## IN-EAR MONITORS (IEM)

Brand	Model	Impedance	Frequency Response (in Hz)	Driver Size (in mm)	Price (in ₹)
SoundMAGIC	PL21	12 ohms	15-22,000 Hz	9 mm	639
Creative	EP-630	16 ohms	6-23,000 Hz	9 mm	720
iDance	EB-X206	16 ohms	20-20,000 Hz	11 mm	763
Tekfusion	Ecoofers	16 ohms	18-23,000 Hz	NA	798
Sennheiser	CX 180 Street II	16 ohms	20-20,000 Hz	NA	820
Sony	MDR-EX110LP	16 ohms	5-24,000 Hz	9 mm	820
JBL	T100A	16 ohms	20-22,000 Hz	8 mm	999
Cowon	EM1	16 ohms	20-22,000 Hz	10 mm	1,100
Cowon	EK2	16 ohms	20-22,000 Hz	10 mm	1,100
JVC	HA-FR37-B	16 ohms	8-20,000 Hz	11 mm	1,399
Tekfusion	Twinwoofers	16 ohms	19-21,000 Hz	10 mm	1,399
JVC	HA-FX101	16 ohms	5-20,000 Hz	8.5 mm	1,699
Creative	HITZ MA350	NA	6-23,000 Hz	9 mm	1,799
Sony	MDR - XB30 EXBCE	16 ohms	4-24,000 Hz	13.5 mm	1,930
JBL	Synchros E10	32 ohms	10-20,000 Hz	9 mm	1,990
SoundMAGIC	E10	16 ohms	15-22,000 Hz	10 mm	2,149
SoundMAGIC	E10S	16 ohms	15-22,000 Hz	10 mm	2,199
JBL	J33	16 ohms	10-24,000 Hz	9.2 mm	2,240
Urbanears	Medis	32 ohms	20-20,000 Hz	15.4 mm	2,953
Audio Technica	ATH-CKX9	32 ohms	5-25,000 Hz	13.5 mm	3,000
Harman Kardon	NI HKAK1001	NA	20-20,000 Hz	9 mm	3,500
Sennheiser	OCX 685i Sports	16 ohms	18-20,000 Hz	NA	4,499
Beyerdynamic	iDX120ie	47 ohms	12-23,000 Hz	NA	4,725
Shure	SE215-CL-KCE	20 ohms	22-17,500 Hz	NA	8,000
AKG	K350WHT	16 ohms	12-23,500 Hz	NA	8,210
Martin Logan	Mikros 70	22 ohms	9-19,000 Hz	6.6 mm (Dynamic)	8,500
Bose	IE2	NA	NA	NA	9,700
Klipsch	A5i	17 ohms	10-19,000 Hz	NA	10,990
Yamaha	EPH100	16 ohms	20=20,000 Hz	6 mm	12,999
Audio Technica	CKS1000	16 ohms	5-26,000 Hz	13 mm	13,499
Cowon	EH2	32 ohms	20-22,000 Hz	NA	14,500
Bang & Olufsen	Play 1642103	18 ohms	20-16,000 Hz	NA	17,700
Shure	SE425-V	22 ohms	20-19,000 Hz	NA	20,685
Klipsch	X11i	50 ohms	5-19,000 Hz	NA	23,900
Bose	QuietComfort 20i	NA	NA	NA	25,200
Shure	SE535-CL-KCE	36 ohms	18-19,000 Hz	NA	30,300
Audio Technica	CKM1000	17 ohms	5-30,000 Hz	14 mm	30,499
Sennheiser	IE8i	16 ohms	10-20,000 Hz	NA	30,499



**Kaspersky's fake viruses?**  
Kaspersky accused of creating fake malwares for over 10 years by two ex-employees. Kaspersky denies. <http://dgit.in/kavcrstsvirus>



**Soon in India, too?**  
Xiaomi launches on-demand roaming data feature in China, keeping others at hold. Read more about this killer feature here: <http://dgit.in/ondmndroam>

**Price Watch**



## 4K (UHD) TVs

Brand	Model	Display Size	Screen Type	Native Resolution	Smart (Y/N)	HDMI Port	USB Port	Price (in ₹)
LG	40UF670T	40-inches	LED	3840X2160	Y	2	1	57,356
Samsung	40JU6470	40-inches	LED	3840X2160	Y	4	3	79,900
Micromax	42C0050UHD	42-inches	LED	3840X2160	Y	3	3	35,990
VU	42D6455	42-inches	LED	3840X2160	Y	3	4	35,990
Intec	IV421UHD	42-inches	LED	3840X2160	Y	3	4	34,760
LG	43UF690T	43-inches	LED	3840X2160	Y	2	2	65,000
VU	48D6455	48-inches	LED	3840X2160	Y	3	4	42,990
Micromax	50K2330UHD	49-inches	LED	3840X2160	Y	2	3	47,990
Philips	50PUT8509/98	50-inches	LED	3840X2160	Y	4	2	1,55,000
Samsung	55JU6470	55-inches	LED	3840X2160	Y	4	3	1,69,900
LG	55UF670T	55-inches	LED	3840X2160	N	2	1	1,29,814
Sony	KD-55X8500B	55-inches	LED	3840X2160	Y	4	3	1,99,900
LG	55UB850T	55-inches	LED	3840X2160	Y	4	3	1,60,550
Samsung	55HU9000	55-inches	LED	3840X2160	Y	4	3	2,13,750
Toshiba	L9300	58-inches	LED	3840X2160	NA	4	1	1,34,304
Philips	58PUT8509/98	58-inches	LED	3840X2160	Y	4	2	2,35,000
LG	65UB950T	65-inches	LED	3840X2160	Y	4	3	3,22,905
LG	65UC970T	65-inches	LED	3840X2160	Y	4	3	3,89,405
Philips	65PUT8609/98	65-inches	LED	3840X2160	Y	4	2	3,72,500
Sony	KD-79X9000B	79-inches	LED	3840X2160	Y	4	3	5,90,902



## SMART BANDS

Brand	Model	Display (Y/N)	Activity Tracking	Sleep Tracking	Body Material	Water Resistant (Y/N)	Compatible OS	Price (in ₹)
GOQii	Premium JC-039	Y	Y	Y	Silicone	Y	Android, iOS	1,999
Gofit	E02	Y	Y	Y	TPU	Y	Android, iOS	2,899
Fitastic	S2 Fitness Band	Y	Y	Y	Silicone	Y	Android, iOS	3,300
Misfit	Flash	NA	Y	Y	TPU	Y	Android, iOS	4,025
Runtastic	Orbit	Y	Y	Y	Silicone	Y	Android, iOS	4,399
Smart	iFit Touch	Y	Y	Y	Rubber	Y	NA	4,599
Sony	Smartband SWR10	N	Y	Y	Silicone	Y	Android	4,699
Garmin	Vivofit	Y	Y	Y	Silicone	Y	Android, iOS	4,999
Garmin	Vivofit 2	Y	Y	Y	Silicone	Y	Android, iOS	5,890
Fitbit	Flex	NA	Y	Y	Silicone	Y	Android, iOS	9,799
Fitbit	Charge	Y	Y	Y	Silicone	Y	Android, iOS	15,999
Jawbone	UP3	N	Y	Y	TPU	Y	Android, iOS	17,999
Fitbit	Surge	Y	Y	Y	Silicone	Y	Android, iOS	22,999
Garmin	Forerunner 620	Y	Y	Y	NA	Y	Android, iOS	50,487

■ Basic rig = ₹24,673 ■ HTPC = ₹30,953 ■ Entry-level gaming = ₹53,188 ■ Mid-range gaming = ₹68,094 ■ Ultra high-end = ₹2,95,811 ■ Digit Test Rig = ₹3,35,800

## BASIC RIG

Processor	Intel Pentium G3240	4,100
Motherboard	ASUS H81M-CS	3,290
RAM	Kingston ValueRAM 2 GB 1600 MHz	1,050
HDD	Toshiba 500 GB DT01ACA050	2,690
Graphics Card	None	0
PSU	Corsair VS450	2,228
Speakers (2.1)	Creative SBS A120	1,450
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Logitech MK200 (Bundle)	845
Keyboard	Logitech MK200 (Bundle)	0
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	₹16,628
Monitor	Dell E2015H 20 inch LED	5,520
Cabinet	Antec ASK-4000B-U3	2,525
Total		₹24,673

## HTPC

Processor	Intel Core i3-4150	7,090
Motherboard	MSI B85M-G43	5,700
RAM	G.Skill RipjawsX F3-12800CL9D-4GBXL DDR3 4 GB (2 x 2 GB)	2,250
HDD	Western Digital WD30EZRX 3 TB	7,810
Graphics Card	None (IGP HD4400)	0
PSU	Corsair VS450	2,228
Speakers	None	0
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Logitech MK220 Wireless Combo	1,150
Keyboard	Bundled	0
Sound Card	None	0
Monitor	None (your TV)	0
Cabinet	Silverstone Sugo Series SST-SG02B-F-USB3.0	3,750
Total		₹30,953

## ENTRY-LEVEL GAMING

Processor	AMD FX8320	9,990
Motherboard	Gigabyte GA-970A-DS3P	5,250
RAM	ADATA Premier DDR3 4 GB (2 x 2 GB) PC RAM (AD3U1333B2G9-R)	3,100
HDD	Seagate Barracuda 1 TB	3,300
Graphics Card	SAPPHIRE R7 265 2 GB	13,200
PSU	Cooler Master Thunder 450 W	2,678
Speakers	Philips MMS4040F/94 - 2.1 Channel	2,750
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Logitech MK200 (Bundle)	845
Keyboard	Logitech MK200 (Bundle)	0
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	₹42,088
Monitor	Dell S2240L	8,350
Cabinet	Antec X1-T Gaming	2,750
Total		₹53,188

## MID-RANGE GAMING

Processor	Intel Core i5-4460	11,490
Motherboard	ASUS B85M-G	5,390
RAM	Gskill SNIPER F3-12800CL9D-8GBSR1	4,100
HDD	Toshiba 1TB DT01ACA100	3,550
Graphics Card	ASUS GTX 960 STRIX-GTX960-DC20C-2GD5	16,499
PSU	Seasonic S12II 620 Watts	5,950
Speakers	Logitech Z523	6,100
Optical Drive	Samsung SH-224DB/IDDS	975
Mouse	Dragon War Dragunov	1,090
Keyboard	Circle Armor	1,850
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	₹56,994
Monitor	Dell S2240L	8,350
Cabinet	Antec X1-T Gaming	2,750
Total		₹68,094

## ULTRA HIGH-END GAMING

Processor	Intel Core i7-6700K	25,290
Motherboard	Gigabyte GA-Z170X Gaming 7	22,000
RAM	Gskill Ripjaws4 DDR4 F4-2400C15D-16GRR (2x 16 GB kits = 32 GB)	22,464
HDD	WD WD30EZRX 3 TB + Samsung 850 Pro 256 GB SSD	19,409
Monitor	ASUS PB279Q 4K UHD	65,000
Graphics Card	ZOTAC NVIDIA GTX 980Ti AMP! Extreme Edition	61,850
Cabinet	Corsair Obsidian Series 750D	11,000
PSU	Antec HCP-1000 Platinum 1000W	15,148
Speakers	Logitech Z906 5.1	22,000
Optical Drive	LG Blu-ray WH16NS40 RW	6,800
Mouse	Razer Death Adder 2013	3,250
Keyboard	Corsair Gaming K70 RGB	12,900
Sound Card	ASUS Xonar D2X 7.1	8,700
Total		₹2,95,811

## PRIMARY DIGIT TEST RIG

Processor	Intel Core i7 - 4960X (Extreme Edition)	70,159
Motherboard	ASRock X79 Extreme 9	29,250
RAM	Corsair Dominator 2133MHz (4x8 GB) (CMD32GX3M4A2133C9)	38,650
HDD	Toshiba DT01ABA100V	3,690
SSD	SanDisk Extreme II 240 GB (x2 in RAID 0)	24,200
PCIe SSD	Kingston HyperX 480 GB	48,000
Graphics Card	NVIDIA GeForce GTX 980Ti	61,000
Cabinet+ Cooler	Cabinet (NA) + Intel RTS2011LC - Stock AIO	NA
PSU	Corsair HX1050	16,291
Monitor	Acer XB240H - 24 inch	22,310
Optical Drive	NA	NA
Mouse	Razer Ouroboros Elite	11,750
Keyboard	Tt eSPORTS Meka G1	10,500
Total		₹3,35,800



# digit RECOMMENDED BUYS

From smartphones to graphics cards, here's what we recommend for your next purchase!



## TOP 3 SMARTPHONES

Brand	Model	Price (in ₹)
Samsung	Galaxy S6 Edge	53,400
OnePlus	Two	24,999
LG	G4	42,890



## TOP 3 SMARTPHONES UNDER 15K

Brand	Model	Price (in ₹)
Asus	Zenfone 2	15,000
Xiaomi	Mi 4	14,999
Xiaomi	Mi 4i	12,999



## TOP 3 GAMING LAPTOPS

Brand	Model	Price (in ₹)
Dell	Alienware 17	1,94,990
ASUS	G750JX-CV069P	1,49,999
MSI	GE60 2PE	1,38,500



## TOP 3 ULTRABOOKS

Brand	Model	Price (in ₹)
Acer	Aspire S7-392	89,000
Dell	Inspiron 7437	68,990
Apple	MacBook Air MD711HN/B	54,000



## TOP 3 GAMING MICE

Brand	Model	Price (in ₹)
Razer	Ouroboros Elite	11,750
Roccat	Kone Pure Color	4,550
Logitech	Proteus Core G502	4,792



## TOP 3 GRAPHICS CARDS

Brand	Model	Price (in ₹)
XFX	Radeon R9 295X2	90,999
NVIDIA	GTX Titan X	83,599
ZOTAC	GTX 980 Ti Amp! Extreme Edition	61,850



## TOP 3 TABLETS

Brand	Model	Price (in ₹)
Apple	iPad Air 2 (32GB Cellular)	34,500
HTC	Nexus 9	25,999
Apple	iPad Air (16GB)	28,900



## TOP 3 BUDGET TABLETS

Brand	Model	Price (in ₹)
Lenovo	A8-50 (16GB Cellular)	17,000
Apple	iPad Mini (WiFi)	17,900
Xiaomi	MiPad	12,999



## TOP 3 GAMING CABINETS

Brand	Model	Price (in ₹)
Corsair	Obsidian 900D	23,850
Cooler Master	HAF Stacker 935	14,137
NZXT	Phantom 820	17,500



## TOP 3 GAMING KEYBOARDS

Brand	Model	Price (in ₹)
Corsair	K95 RGB	14,400
Razer	BlackWidow Ultimate 2014 Elite	10,650
Cooler Master	Quick Fire Ultimate	10,599

**Industry Connect**

We talk to several biggies and emerging IoT companies and also have a heart-to-heart with the CEO of Crayon India.

**Powerrrr!!!**

This hydrogen fuel cell inside iPhone provides enough battery to last for a week  
<http://digit.in/ihydrocell>



# Decoding your startup's cloud strategy

How aligning yourself with the right cloud ecosystem tuned for your startup business is the biggest decision affecting your impending success or failure. We tell you how to get it right.

Abhishek Kumar  
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**A**rguably, a brilliant business idea continues to be the most critical requirement for a successful and sustainable enterprise. But never before in history, was it this easy to convert a brilliant business idea into a successful and sustainable enterprise. Thanks to the technological advancements all around us, the entry barriers both developing a product or service and finding a market for them have dropped below imagination. We would stress on the word imagination, because the purpose of this article is not only to talk about the wonders of what we call cloud computing and how as an entrepreneur you could

leverage it, but also to establish that today, we are living in an era where the only limitation is imagination. In the last article under this series you would have learned how to go about initiating your startup and approach for funding, now let us see how you can efficiently use your funds to solve complicated technical challenges and win big with cloud computing.

Let's familiarize ourselves to some key aspects of enterprise computing, because in the enterprise arena the meaning and the scale of computing is vastly different from what we typically consider them to be as a consumer.

Consider this scenario: You have realized that the current players in the space of online groceries and supplies shopping are not very efficient and you think you know

how you could do it better; after all, Google wasn't the first internet search company, neither was Microsoft the first system software company! So you plan to start your own online shopping site BestEverything. IN and as the CTO and CIO of BestEverything, you are responsible for architecting and deploying all the necessary applications that are needed to run the company. These could be the "customer" facing applications like the highly interactive website where customers search for items and manage their orders, the swanky mobile app, the customer care portal and so on. The other set of applications would be the business applications that you may need to implement to run the company itself, like your email systems, system for managing your human resources, your enterprise resource management system to efficiently manage different aspects of your business etc.

Now you are sitting with your team of talented engineers to formulate your strategy around implementing all these applications and within first five minutes of the discussion it becomes abundantly clear what are the top engineering and business problems lying ahead of your team that need a solution. Your customer facing applications need to run 24x7 and should be very responsive. That means the servers that run your website, storage devices that store your data, and the networking hardware that connects your servers and storage with each other and with rest of the world through internet should never fail. Also, they should have sufficient processing power to handle the traffic that your website will generate. But the problem is that your servers, storage and networking hardware will fail, that too, randomly, and for various reasons, like power failure. Also your website traffic is not going to be constant or perfectly predictable. So provisions will have to be made both in software and hardware that if a component fails, the availability of the application itself is not compromised. Moreover, enough data processing resources like CPU cores, memory, disk drives and network bandwidth will have to be sized and made available in the datacenter so that your website and mobile app continue to be responsive and user experience is not compromised during peak loads. The easy solution is to buy lots of servers, storage, network and



## Google loses data

Google lost 0.000001 per cent of user data when lightning struck a grid in Belgium.

<http://digit.in/ggldataloss>

## Keep a check on it!

Want to know the nutrition value of almost anything? Spe.It tells you all.

<http://digit.in/calchkweb>

Work@tech

datacenter space but immediately your Chief Financial Officer (CFO) would remind you that you are a startup and you don't have millions to spend on just IT infrastructure; you need funds to grow many other business units like marketing, sales, workplace resources and you have to hire more engineers too. You could argue that you have saved a lot of money on software by using open source and instead of buying expensive licenses for commercial technologies you used Linux, MySQL, JBoss and Python/PHP to develop your applications. But all the hardware required to run your stuff is still a big expense, and not to forget, you will need a team of tech savvy team of system administrators who can effectively manage this infrastructure and keep them updated, backed up, patched and secure.

On the other hand, business applications that your company needs to run for its own operations are also not absolutely straightforward. Being a technology savvy company you may decide to develop your own systems for managing HR, Finance, Email etc., but that may not be the best use of your engineering resources. However right from evaluating a business application to successfully deploying it may be very time consuming and expensive.

Now here is where cloud computing can play a big role in giving you a headstart and provide you a platform that could eliminate or at least minimise many of these technical and business challenges.

Cloud computing in essence is a utility model of consuming hardware and software resources, much like how you consume electricity at your home. It can provide you a platform where you practically have limitless supply of hardware and software, available to you as a service where at a push of a button you can get everything you need to develop your application, deploy it for anyone in the world to use it over the internet, and manage the entire lifecycle of the application while being billed for only how much you use it.

You may ask, so what is the big deal? Imagine if you had to build a nuclear power plant and had to have the technical knowhow and resources to operate one in order to have electricity supply at your home to power your TV, XBOX and PC. Believe it or not, but most

of the large scale enterprise computing happens this way, even today. An automobile manufacturing company may employ more software engineers and system administrators, have bigger datacenter and spend more on buying software and hardware than an equally large software development company!

## Introducing Cloud

There are three broad categories under which cloud services could be categorized, let's understand each one:

### Software as a Service (SaaS)

Probably, the most popular method of using cloud services, Software as a Service lets you use a software directly on a subscription basis, eliminating various technical challenges on the way. Many business applications today are available for use through a Software as a Service model. At BestEverything.in, you will need to provide all your employees with a @BestEverything.in email. You may need to provide them with productivity software for word and spreadsheet processing. Everyone in the HR department will need a HR management system, the sales and marketing team may need a customer relationship management software. Your web administrator may need some sophisticated software to track and analyse the trend of visitors at BestEverything.in, etc. You could very simply implement the solutions for these needs through plethora of SaaS offerings available over the internet. For example, it could take many weeks to implement a mailserver on your own, but companies like Google, Microsoft and Zoho can provide you a SaaS

based mail and messaging service through which you could have a fully functional email service rolled out for the entire company in less than an hour. Many As SaaS model takes away the technical complexity of installation, configuration and ongoing maintenance of the software, BestEverything can implement best-in-class business applications (think SAP) from day one of its operations and follow best-in-class business processes that will make running BestEverything as efficient as possible. And it will automatically update to its latest version.

Apart from saving you time and technical efforts, SaaS also saves money. Software delivered through SaaS is charged per user and therefore only people in finance who use the finance software will add to the cost. However, software delivered through SaaS may have limited customizability and sometime you may be forced to go to a new version of the software even if you do not want to do so. But for a startup, it is a great way to get started and scale the business without wasting time, effort and money in implementing different business applications.

### Infrastructure as a Service (IaaS)

In order to develop and test the BestEverything.in, the development team has raised a request for 10 virtual machines and 5TB of storage capacity. For running the production environment, the team needs 2 database servers, 4 application servers, and 6 web-servers. Minimum of two load balancers are required to spread the incoming traffic across the web servers. Moreover, the exact setup should be provisioned in a second datacenter somewhere nearby the first one

## Some Open Source business applications to consider for your Startup

Enterprise Resource Planning	Odoo	<a href="https://www.odoo.com/">https://www.odoo.com/</a>
Human Resource Management	Orange HRMS Live	<a href="http://www.orangehrm.com/OrangeHRMLive.php">http://www.orangehrm.com/OrangeHRMLive.php</a>
Customer Relationship Management	SugerCRM	<a href="http://www.sugarcrm.com/">http://www.sugarcrm.com/</a>
Enterprise Portal and Collaboration	Liferay	<a href="http://www.liferay.com/">http://www.liferay.com/</a>

<Exploring cloud is relatively easy, as many popular cloud service providers have options to help you try their IaaS and PaaS solution before you make any purchase or investments. For example, Amazon offers its users a free usage tier, through with a new user can spin small VMs on their Elastic Cloud (EC2) for no charge for up to a total of 750 hours. Similarly, Microsoft Azure provides a one month free trial of their cloud options.>





## Now, Livetext globally!

Yahoo released its silent 'video chat' messaging app globally recently  
<http://dgit.in/yahoolivetxt>



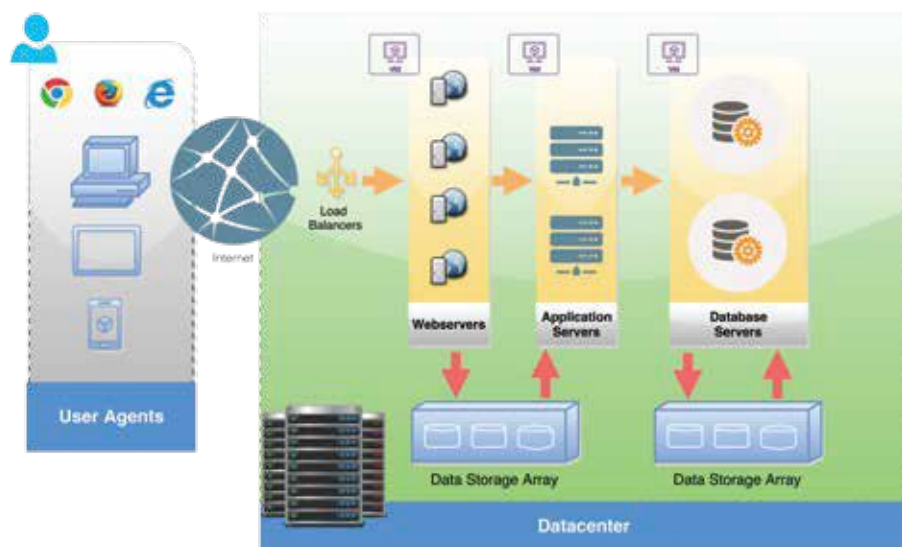
## Pinpont it at Maps

Google Maps' new update supports more locations, thanks to Open Location Codes  
<http://dgit.in/olcgmmaps>

and should be continuously receiving replicated data from the first data center, so that if the entire datacenter was to get impacted (due to a network outage or a power issue or anything else), BestEverything.in continues to be available.

Buying the servers and storage and other required hardware assets would be costly, will take weeks to arrive and months to configure and install. Using IaaS provider (e.g. Amazon Web Services, Microsoft Azure, Google Compute Engine etc.) BestEverything's development team can choose to spin up any number of VMs having CPU

basis and rates could be very low. Moreover, during the night when the developers are not using the development VMs, or during the off-peak hours when the number of visitors on the website is lower than usual, you could spin down some of the production and development VMs and save costs. Your IaaS provider may even provide application programming interfaces (API) which would help you automate various tasks like provisioning new virtual machines and booting up (or down) various instances running your application, helping you run your application extremely efficiently.



A typical infrastructure that would be required to develop and test BestEverything.in

and memory configurations of their need within minutes, and running an OS of their choice. For the production environment the VMs could be configured across two separate availability zones provided by the IaaS provider, which will ensure protection from datacenter-wide failures. Tomorrow as the number of visitors increase, the number of web servers need to be increased and more storage capacity is to be added to the database servers in order to scale up the website, and using the same set of tools provided by the IaaS provider, it can be done on the press of a button.

If it was not for the IaaS, even before the first build of the website was out, BestEverything would already be in thousands of dollars of debt and months behind schedule. Stability because of traffic would be another potential cause of concern. On the cost front, IaaS providers typically bill on an hourly


## Platform as a Service (PaaS)

The real power of cloud unfolds in form of Platform as a Service (PaaS), which provides every building block required to develop an application as a service, and extends the possibilities of leveraging cloud computing beyond hosted storage for your application. Through PaaS, complicated, large scale applications can be developed from scratch using popular programming languages like PHP, .NET and Java. Databases like MySQL, Oracle and Microsoft SQL Server and middleware technologies like Microsoft IIS and Apache Tomcat, and can then be deployed on the cloud to effectively leverage all the strength of cloud around scalability, security and availability through a deep integration with other services provided by the cloud service provider. Even various higher order technologies like Hadoop are now available as a

platform in the cloud, meaning you do not need to set up your own hadoop cluster in order to run MapReduce or perform other big data analytics related functions thus making it easier.

Consider this example; at BestEverything, you realised that customers spend a lot of time in creating the list of groceries that they would want to order. You could cut short this time drastically by creating a pre-populating suggested shopping cart using an advanced data analytics algorithm; Which not only considers the usual data points like user's previous age, gender, and order history, but also predicts that the user is likely to buy a newly launched gourmet sambhar spice mix, because the user has tweeted links to south indian recipes. Also, he has checked-in thrice into different restaurants popular for their south indian cuisine in the last one month. Using PaaS, engineers at BestEverything can develop this suggestion engine relatively easily without spending many months in just setting up a Hadoop cluster and would not need to make large investments just to test if their suggestion algorithm works well enough to be moved to production.

With PaaS, the entire lifecycle of the application can be streamlined and for any technology-heavy venture which develops its own products, PaaS can open up many new possibilities. As your startup would start to take pace and the time to enhancement would approach, you would appreciate the ease and velocity with which applications developed leveraging PaaS can be scaled and optimized. It could drastically reduce your time-to-market and give you a competitive edge over other established players.

Today, the shape and scale of business has become unfathomable. If you can imagine, you can become world's one of the largest taxi service, even without owning a single taxi of your own, or become a hub for maximum real-estate rentals without owning a single hotel of your own, or become the de-facto channel for breaking news without hiring even a single journalist. Next time you have a similarly revolutionary business idea, your chances of success could increase multifold if you have cloud computing as part of your strategy. 



### Google's Router- OnHub

Google launched its new Wi-Fi router called OnHub and it's priced at \$199.  
<http://dgit.in/googleonhub>

### Faces on Watch

Google just made Android Wear a lot more useful and user friendly with new interactive faces.  
<http://dgit.in/andwrfaces>

Industry Connect



# Software Asset Management is here to stay

We have a chat with Vikas Bhonsle, CEO, Crayon Software Experts India Pvt Ltd. about the SAM industry in India

◀ Vikas Bhonsle, CEO, Crayon Software Experts India Pvt Ltd

Mithun Mohandas

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**1** Crayon Software Experts entered the Indian market only last year while it has been active globally for over a decade.

**Vikas Bhonsle:** Crayon was founded in Norway, 13 years ago. As the business grew, the company naturally expanded into the nearby Nordic markets as culture and business practice was most closely aligned there and then into the wider western European markets. Organic expansion also needed both cost and time. Then we had to generate enough return for expansion. It was also important to find the right leaders to drive the wider business. Our entrance into India should be seen in the context of this expanding continuum - after all we entered India at about the same time as market entries in SEA, MEA and much earlier than the US - and no one would say the US market is either small or insignificant. As we continue to expand, people should not be surprised to see us enter into other important markets in SEA and in Latin America.

**1** With plenty of players in the software licensing market currently, what does Crayon Software Experts aim to do different to gain market share?

**Vikas:** The tech industry is always in flux. Frequent new products and category

innovation define and redefine the sector's constantly shifting landscape. But lately we've seen even greater instability than usual, and it has begun to affect the temperament of software companies themselves. At Crayon we believe in doing things differently. We would like to be the differentiator.

To begin with, we believe we are uniquely positioned as we cater to the entire life cycle management of the software assets. Whether the licensing is perpetual or on subscription, we have solutions for the same. We also offer consulting and deployment services for various technologies. And we are the largest and fastest growing SOFTWARE ASSET MANAGEMENT consultants across the globe. Our world class framework on SAM helps build process, policies and drive greater usage of assets for our customers. We believe we can serve all the needs of our customers under one roof. And yes, being a very young company in India we have no legacy and we are building our business philosophy on the cloud first, mobile first era that aligns ourselves beautifully to the landscape.

Crayon has a Pan-India presence with expertise in Licensing, SAM, Software Distribution, Deployment and Consulting.

**1** Does India exhibit the same ratio between different revenue sources as

developed markets? Or does it favour one segment only?

**Vikas:** When I look at my different lines of business, I would say that the major business comes from licensing, followed by SAM and consulting. However, we have been conscious enough to drive a high mix of cloud by ensuring we build value for our customers through our expertise and skill. Our cloud mix is higher than 50 per cent on the licensing side.

When one compares this with the developed markets - I would say the ratios are similar. It is a function of market maturity as well. Eg. The developed markets have a far higher acceptance and adoption of SAM as compared to India. Hence, the business is more robust on SAM in those markets but even then the ratios are fairly similar.

**1** With more and more global companies gaining a foothold in India and also making it simple to obtain licenses directly, would you consider that a worrying trend?

**Vikas:** Competition is always welcome and is a sign of a growing and maturing market. For a vast country like India, I believe that more global companies will only increase the capacity to address more customers, bring best practices to India and thus improve the overall quality of solutions delivered to the end customer. This is very healthy. **1**



## 22-core Xeon processor

Intel is planning to launch a 22-core Xeon processor in late 2015.  
<http://digit.in/22crepcsr>

## The new 'long' trend

Long scrolling websites have become the trend and are most preferred these days.  
<http://digit.in/longwbsts>

# From servers to sensors

The promise of a new wave of interconnected devices and services aka IoT may not be just a gimmick after all

Jayesh Shinde  
[jayesh.shinde@digit.in](mailto:jayesh.shinde@digit.in)

Since CES in January earlier this year, the technology world has been bombarded with a magical marketing term – “Internet of Things”, a promise of a whole new era of intelligent automation thanks to the overbearing power of digitisation.

The Internet of Things may feel like a concept taken right out of the sci-fi manual, given the scope of its magnificence. It's a nevertheless equally daunting dream to realise in its full-scale implementation. Yet, from all the evidence we saw at a recent media tour in Taiwan – an international hub of hardware manufacturing in the information and communication technology space – IoT (Internet of Things) isn't just a figment of some technology marketer's wild imagination. Global companies like Acer, Advantech, ARM and MediaTek, among others, are working hard to ensure products and services are launched in the coming months that will help propel the dream of IoT towards fruition. Let's look at some of the things they're doing.



## Smart everything: Acer and Advantech

Digit readers need no introduction to Acer, of course – we've been writing about and reviewing its products for many a year now. However, the Taiwanese company's cloud services and solutions may not be as well known on hither shores. Apart from being a hardware and electronics company, Acer has been making steady

in-roads into the cloud computing vertical to ensure that it's poised to offer unique solutions in the IoT industry as well.

Acer likes to refer to IoT as the “Internet of Beings” and believes that this concept heralds the beginning of a new computing and communications era. Sensors won't just be dumb entities capturing data, but will also have an element of computing embedded within them (either



## Bonjour, new spell check!

Chrome now enables you to perform spell check on multiple languages simultaneously.  
<http://dgit.in/chromemlsplchk>



## Text to GIF. Err...?

Speak into your microphone and watch the words spoken turn into a GIF.  
<http://dgit.in/mic2gif>

Industry connect



Acer aBeing One for IoT

locally or through the cloud). How is the company planning to attack the market? By enabling customers to implement smart IoT solutions through its 'aBeing' line-up of products, which will launch later this year.

The Acer aBeing One PC is aimed at developers who want to develop their own IoT solutions. It's designed to connect to smarthome and wearable products, and act as a hub that analyses incoming data from the devices. The 'abPBX Plus' is an advanced version of the aBeing One, offering high-end professional server grade communication services.

A key component propelling IoT's advancement in the near future is Acer's 'Open Platform Ecosystem', for which it has partnered with a range of companies to provide important turnkey solutions. For e.g. Acer's Open Platform incorporates 'Snappy Ubuntu Core' by Canonical to showcase a smart home surveillance solution. If an intruder were to break in, the motion-triggered camera would store video locally on an aBeing One, alert the homeowner on their smartphone and wait for further instructions. Similarly, Acer's BYOC hybrid cloud can be used for global fleet management (for a radio cab service, for example) through its mobile sensor hub devkit or smart healthcare solutions to be provided in a hospital scenario – all powered by the aBeing One at some level.

At Acer's headquarters, we're privy to smart thermostats, cloud-connected coffee makers, educational IoT devkits and syncing services that the company is working on – look at this video: <https://youtu.be/qx5jNjf7xnc>. It won't be an understatement to say that

Acer is investing heavily on cloud services and devices like the aBeing One to ensure that the recipe for IoT can come together effortlessly.

Another interesting Taiwanese company doing great work in the IoT domain is Advantech, whose motto is "Enabling an intelligent planet." It's a world leader in manufacturing and designing integrated embedded computing solutions that enable an enhanced level of automation through digitisation – at factories, on the road, in the building premises, at home, everywhere. And some of the demos we got to check out were actually quite amazing.

The company is known for building built-in self-sensing technology for IoT applications. It does this by manufacturing Box PCs that self-manage, self-protect and communicate seamlessly. Some of the things that Advantech specialises in are intelligent transportation,

smart retail, intelligent buildings, intelligent agriculture, and digital logistics and fleet management.

As a case study, Advantech highlighted its smart gantry solution implemented in Taiwan. It digitised 319 gantries, monitoring 6 million vehicles and carrying out 14 million transactions per day – completely removing the need for toll booths, as found on Indian roads. What makes this IoT solution so great? Due to seamless traffic movement, 22.5 million commuters' minutes were saved every day, leading to 60 million litres of reduced fuel consumption per year and a whopping 138,000 tonne of reduced carbon emissions per year.

Demonstrating its smart buildings IoT solution is Advantech's headquarters in Taipei, Taiwan, a living proof of concept. It has 20-metre high plant installations that are watered and tracked automatically without any

## STARTUPS BETTING ON IOT

One of the major differences between startup ecosystems in India and Taiwan is simply comes down to manufacturing – while a majority of Indian startups try to be software solution-based (trying to push an app on to the customer), Taiwanese startups are (not surprisingly) more hardware-oriented. Products are physical there, whereas Indian startups are more competent in rolling out non-physical software. Here are three interesting hardware-based startup products from Taiwan:

- **Odin Laser Projection Mouse** – From Serafim Technologies comes a tiny, matchstick-sized laser mouse named after a Norse God. Extremely light and pocketable, Odin claims to be the world's first projection mouse. Meaning? It projects a beam of laser light onto the surface in front of it, allowing users to use any surface as a makeshift touchpad. And it detects pinch, zoom, two-fingered scroll motions too, along with a distinct right and left click action.
- **Jumpy Kids Smartwatch** – Loosely resembling a Qualcomm Toq smartwatch, Jumpy's a cute little smartwatch for kids with an animated character built in for kids to have fun, learn and play. It's unlike any other smartwatch, as it comes with a smart companion called "Jumpy" built into the device that helps kids run around, play and do other fun activities. It connects to the internet, allowing parents to keep track of their kids all the time. The company's current CEO, Jerry Chang, previously used to work for Foxconn.
- **Triton for divers** – Omnistar, another startup from Taiwan, is trying to make a big splash into the world of diving, by giving divers a Fitbit equivalent – something that tracks their dive in great depth, a process that currently has no consumer-friendly digital solution. The prototype device is still under wraps, but when ready, they plan to make recording and sharing dives as simple as sharing your jog or sprint through fitness apps on social media – that too in real time. Great news for IoT under the deep blue sea, eh?





## Endless Pac-Man

Pac-Man turned 35 recently and Nintendo's released a new title to celebrate. You can now play endlessly <http://dgit.in/endlesspacman>

## Outlook for iOS updated

Outlook users can now open their MS Office attachments easily and edit them. <http://dgit.in/newiosoutlk>



Advantech demonstrating an intelligent smart ticketing system on the road

human intervention. On its roof, sits one of the largest privately owned solar-panel installations in Taiwan, powering the building's electricity needs. It has touch-enabled smart displays (running on Windows 7 no less) throughout the building, allowing residents and visitors to interact with it and get information. Conference rooms with internet-connected motion sensors let you know if a room is occupied by automatically turning red or green on its outside.

Whether it be automatic fare collection on the road, smart parking spaces, intelligent buildings or the next wave of smart factories that will help us reduce the adverse impact of technology on our ecology, Advantech's innovations are ensuring IoT isn't just a pipe dream anymore. It's more than real.

## Chip-level innovations: ARM and MediaTek

As you probably know, ARM chips are based on "reduced instruction set computing" or "RISC". This provides ARM devices with significant gains in the area of power-efficient computing – of paramount importance to sensor end-points, especially ones that need to last quite long (sometimes several years) with really low-powered batteries. And here's how ARM will ensure that IoT becomes an end-to-end reality.

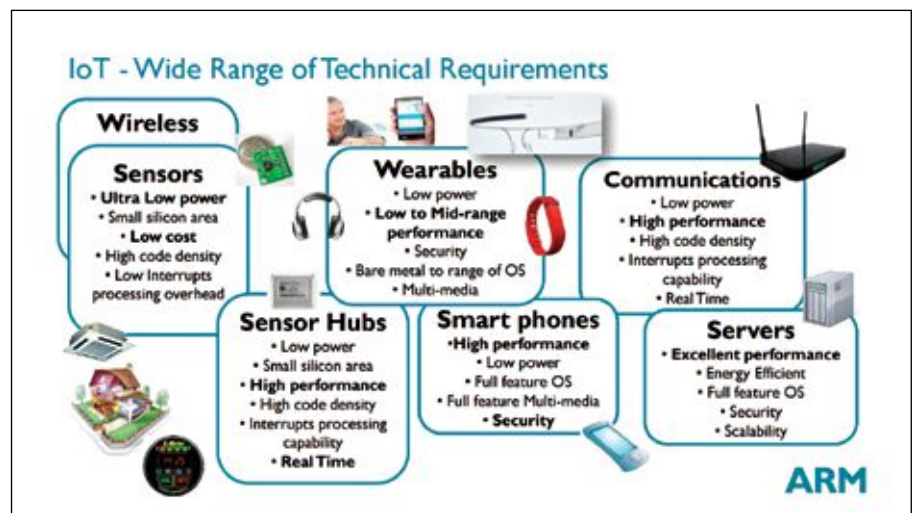
In ARM's family of processors, the Cortex-M is what it thinks will drive the IoT trend across the globe, since by its very definition the Cortex-M family of processors are used primarily for computing tasks involving smallest footprint and lowest power consumption. Things like heart pacemakers, smart street lights, smart washing machines, and wearable devices, among other things, are powered largely by ARM's Cortex-M processors. Whether it's deeply embedded wearable devices like the Nike Smart Shoe or Fitbit Flex or smartwatches like Moto 360, right from measuring 90 nanometres to lasting for up to 15 years, ARM Cortex-M

processors are at the heart of the wearable devices phenomenon.

But that's not enough, is it? ARM has two initiatives specifically targeting the IoT wave in the form of 'ARM Cordio Radio IP' and 'ARM mbed OS'.

Connectivity is the name of the game, and ARM is trying to push the envelope on this by trying to reinvent radio communication standard at the silicon level. The Cordio Radio IP series includes integrated, ultra-low power CMOS radio IP cores along with link layer firmware, stack and profiles supporting 'Bluetooth Smart' – a new standard that sets the stage for a variety of new applications needing ultra-low power wireless connectivity at low cost. This technology is particularly suitable for devices that need to transfer small amounts of data within a relatively short range (2.4GHz frequency, throughput < 305 kbps, range < 50 m). Like existing Bluetooth technology, Bluetooth low energy is universal, interoperable and license-free. Why is this necessary? Because traditional Bluetooth and wireless data standards are too taxing in terms of data packet and power consumption, both of which are managed more efficiently in Cordio Radio IP.

ARM's mbed platform enables device manufacturers and developers to optimally configure chip-level processes. With a chip-level, local, configurable mbed OS (to collect little data) and Internet-connected mbed device server (to analyse big data), IoT application or services can be



ARM's chips are powering end-to-end hardware solutions in the IoT era



## Chalkboard or laptop?

This chalkboard skin for laptop lids is probably the coolest ever!

<http://dgit.in/chalkboardlptp>

## Sony launches SmartBand 2

Sony's SmartBand 2 informs you about your fitness, moods and stress levels.

<http://dgit.in/sonysmrtd2>

Industry connect

powered end-to-end. Currently, ARM has over 1 lakh mbed developers, more than 12,000 published programs and libraries, and 45+ platform implementations. With all these aggressive plans, ARM's surely looking forward to making greater inroads into the IoT space in collaboration with partners designing innovative digital solutions for customer needs very soon. And to think that ARM's RISC chips are poised to be one of the biggest enablers of IoT, in all its various complexities, isn't without its sense of irony.

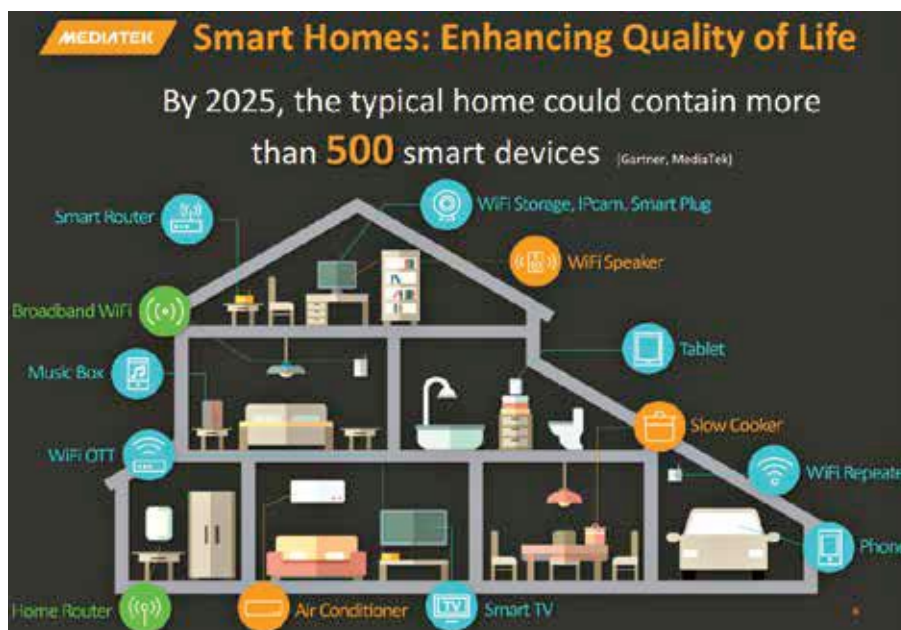
Another company betting big on IoT is MediaTek – we all love it in India primarily for launching a wave of high-performance yet inexpensive handsets in the market. Here's what it's doing to further the IoT industry as a whole.

MediaTek offers complete hardware and software to provide an integrated application platform for developers to build next-generation IoT solutions. Its advanced SoCs are high on performance without compromising on battery life and are geared for multimedia, and its chipsets support a number of communication and connectivity protocols. MediaTek firmly believes that by 2017, 50 percent of IoT solutions will be developed by startups

**According to IDC estimates, the current IoT market is worth \$656 billion. And by 2020, the total market size of IoT could reach up to a whopping \$1.7 trillion.**

that are less than three years old. To power these startups and solutions and to widen their appeal to potential customers, MediaTek is carrying out many activities through its 'Labs' initiative.

MediaTek Labs supports developers through device creation, app development, and services rollout – all for free. The online website of MediaTek Labs also helps out developers in terms of SDKs, HDKs, access to technical documents, solutions catalogue and a service called 'Labs Partner Connect' – and through this, MediaTek targets DIYers and makers as well as professional developers trying to create constantly connected smart home or office solutions.



MediaTek's vision of all the connected devices in our homes by 2025

At its office in Taiwan, MediaTek demonstrated a range of IoT applications and services developed through its Labs initiative. A smart wine brewer, 'Skuromoto' (freely accessible scooters for campus students), smart light, fan and intrusion detection system for homes, wearable devices in the form of smartwatches, shoes and more, non-invasive heart rate monitor, etc.

Well, so far we've learned what a great opportunity IoT presents in the scheme of all things digital. But no one has spoken about its challenges. At MediaTek, we received an answer to this question as well. According to MediaTek, the IoT space faces three critical challenges – interoperability, security and business model. Devices capable of multiple standards are few and far in between, and frankly there are too many independent, proprietary ecosystems, which need to come together and talk to each other to exchange data at a very basic level. Software and hardware companies need to tackle the problem of security together and not in isolation, according to MediaTek, if IoT as an ecosystem needs to grow stronger in the coming future. And one of the most basic challenges for IoT is business models not fine-tuned to capitalise on the opportunity it presents.

For evolving business models, there's a need for cross-industry cooperation for common learning and revenue sharing.

## More smart solutions: Holux, Taiwan Sakura & Mobiletron

Last but not least, we also visited the factories of a few Taiwanese companies – Holux, Taiwan Sakura and Mobiletron. Let's look at them one by one.

With just 150 employees, including factory workers on the assembly line, Holux is a small yet innovative company doing great things on IoT. It's focusing on two verticals – smart homes and wearables. It claims to have made the world's first smartwatch with driving fatigue detection algorithm (recently patented in the US), and has a whole host of temperature, humidity and air quality sensors meant for use in home and industrial applications. Taiwan Sakura is making smart home devices such as smart stove, smart water heater, smart kitchen and more. Mobiletron has been a leader in automotive electronics for over 30 years, and it has made great advancements in fully robotic, remote-controlled factory floors, hardware fabrication and fleet control services. It recently got an Indian transport giant to collaborate with it for Internet-controlled and monitored transport fleet. **[4]**



**Community**

Wondering what USB Type-C is all about? This article by a member of the Digit community should give you a quick run down.

**Cheer up guys!**

China is motivating its programmers by hiring cheerleaders in the workplace.  
<http://digit.in/cheerprgmrs>

# Eccentric women

While the list of eccentrics may seem to be ever filled with men, we went out of our way to seek out members of the fairer sex to find that they're equally eccentric as well if not more. Here are some of the eccentric women, both fictional and real.

**Hetty Green**

Dubbed the 'Witch of Wall Street', she accumulated an enormous wealth but suffered from the Scrooge Mc'Duck syndrome. Her thriftiness went to such extent that she tried to cure her son's foot injury herself only to have gangrene set in leading to amputation. She used to regularly shift apartments to avoid the taxman and rarely ever changed her knickers.

**Björk**

If you've watched the music video titled "Pagan Poetry" then it's no surprise that she made it to this list. But it's not just one incident for which this Icelandic singer made the list. Her weird dancing and off-beat dresses are some of the other things that have cemented this artist's persona as that of an eccentric. To give you an idea, here she is in the iconic swan dress.

**Sarah Winchester**

Heiress to the Winchester estate and a good portion of the firearms company's fortunes, Sarah was completely convinced that spirits would kill her if construction on her home came to completion. So what did she do? Kept on with the construction of course, round the clock, without any pause whatsoever, for thirty... six... consecutive years.

**Florence Jenkins**

What's worse than an opera singer? An opera singer who can't sing! Florence Jenkins' shrill tunes didn't shatter any wine flutes but it sure did crack up quite a lot of the audience in laughter. But she chalked that up to jealousy and rightly so. Her shows were always sold out way in advance even. A true diva, she restricted her performances to few select venues.

**Caroline Prodders**

While aristocrats from the Victorian era were a painful lot to deal with, Caroline Prodders really takes the cake. For 20 years, she'd terrorised cab drivers by making them stop right before they could charge full fare. Having memorised London's fare map, she precisely knew all the routes and would regularly take cabbies to court if they dared to cross her.

**Phoebe Buffay**

The only fictional character in the list, we all know and adore Phoebe from the hit TV series, F.R.I.E.N.D.S. She really stood out from the rest of the group and added to the shows comedic value through her quirkiness, her penchant for the mystic arts, her many weird life experiences, her Regina Phalange alter-ego and also her hit single "Smelly Cat".



## Bizarre robbery

Guy accused of stealing a PS4 tried to make off with the console with his pants down but was caught in the act. <http://dgit.in/ps4inpants>

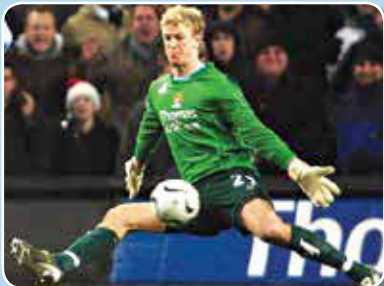


## MicFlip's Got it right

The Android alternative for the lightning cable is here, and it is the worlds first reversible Micro USB. <http://dgit.in/reversemusb>

Unwind

# How we unwind



## English Premiere League

A flurry of quick messages on WhatsApp had most of us scratching our heads in confusion. Only Robert and Jayesh knew what was happening but it soon dawned to the rest of us that they were talking soccer. We know a match has begun when WhatsApp explodes with hundreds of expletives flowing like the holy Ganges.

## Rocket League

Now here's one form of football that the entire team could enjoy. The game has been a continuous source of entertainment and we've been having a ball of a time pulling Ant's leg each time he screws up. And boy do we get plenty of opportunities to exercise our wit with reckless abandon much to the Ant's dismay.



## MI: Rogue Nation

While we weren't as excited for Mission Impossible as we are for Star Wars: The Force Awakens, we decided to make an outing for Tom Cruise's latest and not his greatest. Maybe we've grown to be a fickle lot when it comes to new movies, though none of us could argue against Rebecca Fergusson being a better spy.

## digit DIARY

Where's the one place you'd expect an editor to be during the final days of closing a magazine issue? While most of you might have guessed, 'the office' and would have been right for about 99 percent of the time, but there are instances when people just have to head over to Goa and blow off some steam. And that's exactly where Siddharth is at the moment. Working hard on the beaches of Colva trying to place one foot in front of the other as he stares at his daiquiri wondering about the bartender's psyche because he was given too many ice cubes.

Over the years, we've developed a system of keeping track of all stories going in the magazine. Often, each of us remember the entire index by heart but every once in a while we'd be in for a nasty surprise to find stories...missing! That's right, this little 2-pager slyly crept past each and every one of us and wasn't discovered until a day before the issue was to go to print. See if you can figure out which story it is.

Boy Blunder i.e. the Ant, has finally been accepted into the University of Essex or was it Sussex...? Either ways we've all been trying to imbue him with English etiquette and took him out to dinner where he had to dine à la Continental, i.e. with a fork and knife. If you thought tall people were clumsy, then tall people with a knife and a fork are even more so. Even Creepicheep's (Bless his departed soul!) progeny couldn't bear to part with the lanky Ant. Why you ask? One night as the Ant was having dinner and watch-

ing YouTube, one of them loveable rats scurrying along the ceiling managed to carefully squirt a few drops of Vermin Sauce right onto the Ant's dinner. He maintains that he didn't have any of the tainted food but we're inclined to believe otherwise.

The Test Centre has been quite gloomy every since the Regidi left for his sabbatical. Gaming, has especially been affected and this month we barely played anything new other than

Rocket League. Abhijit and Mithun found solace in Fallout Shelter when it finally came out on Android. We sympathise with the dwellers in their vaults since the two are locked in a fierce battle as to who can get the most number of dwellers knocked up each day.

It is a month for trolling or being trolled! Siddharth, especially, has been the victim of numerous trolling attempts by Nachiket and has finally given up in frustration. He's learnt his lesson and now only replies with one word – "OK", much to the Nachiket's dismay.

This closing was another one of those where everyone were waxing nostalgic about 90's music but with a slight twist – we were listening to 90's Desi Pop. Be it Lucky Ali's *O' Sanam* or Nusrat Fateh Ali Khan's *Afreen*, there was at least one song that each of us learned of for the first time. One such song stood out among all others, and no, it wasn't the music that set it apart. It'd be best if you watched the video:

<http://dgit.in/OhPappa>



### The Digit SKOAR!board

Difficulty level : 1 Fantastic Flop

Rats Incarcerated : 1

Skills learned : Table Manners LVL 2

Quote of the month: 'Main khud ka hi peeta hoo!' - Anonymous student, University of Essex

**BBM trying too hard?**

BlackBerry launches 'Send Money' feature in its BBM app. Read all about it here: <http://dgit.in/bbmsndmny>

**Google your tweets**

Google has now started including tweets in its search results. Read more here: <http://dgit.in/gsrchtwt>



Every month we recognise the best article written by our community members and publish it here. Keep up the good work, Digitians!

# One USB to rule them all and kill it in the process

## All you need to know about the USB Type-C



Lavleen Bhati

In a world where data transfer and management have become not only an asset but also a necessity, a computer or a laptop finds itself surrounded by a sea of wires, be it the charging cable or the USB cables. For people who find themselves using a lot of devices like a printer, a scanner and even a something like a mobile charger or all of them simultaneously, finding a place on their table for even a pen and a notepad is a great achievement. For these people, the introduction of USB Type-C was news to celebrate.



USB Type-C cables are like an answered prayer to those who find it irksome to manage their many vexatious cables. Apple's new MacBook familiarized the world to the slim and new technical standard – the USB Type-C port. This new cable has been designed keeping in mind the future need for speed and efficiency.

Most people confuse USB types with their versions or are unaware of their meaning or significance. USB types define the physical structure of the port while the versions define the characteristics or functioning of the cable. The most commonly used USB types today are Type-A or Type-B USB cables that plug only in one way. Which means that like most computer cables and components, there's only one right way of connecting them. On the other hand, USB Type-C with dimensions of 8.4mm by 2.6mm, has a reversible plug orientation.

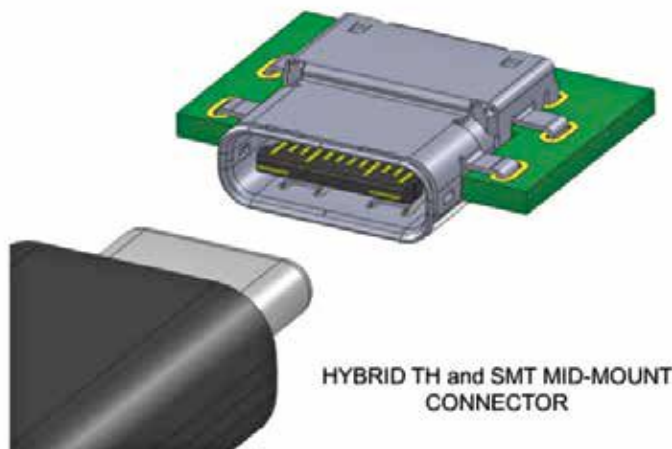
Type C is one third the size of USB Type-A. Its cable has USB Type-C at both ends. Some Type-C cables are said to be active, i.e., they allow host identification and require power levels with the help of a controller chip.

USB Type-C follows the idea similar to that of USB 3.1, for faster speed and USB power delivery for better performance. USB

power delivery increases the power delivery to about 100watts which is ten times more than that of USB 3.0. It has a bandwidth of 10Gbps which is almost double to the bandwidth of USB 3.0. USB Type-C can work under the power current of about 1.5A and 3A under the 5V power bus with the baseline of 900mA.

USB Type-C can connect laptops to mobile phones, to cameras, to keyboards, to printers, scanners and then some more like mobile phones to cameras, or even televisions to laptops and all other new generation devices that have the same port. It's bi-directional in nature which allows us to send and receive power, can be used to charge laptops, by receiving power from the sockets, and mobile phones, by sending power from the laptop, while transferring data at the same time. This solves our problem of limited charge in laptops while travelling and other charging related problems. With this you can charge your laptop in a car using a portable battery charger or a power bank. Also because of its high power delivery, charging will be much easier and faster than what we see today using chargers much smaller than the ones we use today.

But for this cable to act as a charger or work as a connector, the devices that it needs to be connected to must have a USB Type-C port to support the cable. Does that mean that this cable won't be useful for our present day devices that use type A or type B ports? Will we have to buy the new generation devices for



Reference footprint for a USB Type-C Mid-Mount Hybrid receptacle



## Chrome just got faster

Good news for all you Mac users. Chrome just got way faster and is performing better with updates. <http://dgit.in/fastrchrmemac>



## Goodbye, OneDrive groups!

OneDrive's group feature is shutting down on October 16. Read more here: <http://dgit.in/odgroupshut>

Digit Squad

## COMMUNITY CREATIONS



### About the creator

Sijo is a 2<sup>nd</sup> year student pursuing his B. Tech. in Computer Science in Kerala. He enjoys programming in C# and Unity. Sijo was initially creating a 2D platformer about a cult of magicians and that's where the idea for Twin Loop struck him. He apparently built the game in a week and since has been continuing the development of the game.

### About his creation

Twin Loop is an endless puzzle game where you need to survive the revolving spheres from hitting the cubes. You control the two cubes by tapping on them as they jump and avoid being hit with the spheres. The game has an easy and hard mode, both capable of invoking rage quits as you constantly keep hitting those spheres.

better charging and data transfer speed from the cable and avoid cable clutter? Well, here's how it works: USB Type-C can support different protocols using alternate modes that allow you to have adapter that can output to HDMI, VGA, display ports and other types of connections. But alternate mode devices need not always work according to our needs. Enabling USB Type-C cable will require the physical circuitry to tell which way they can direct data and power supply accordingly.

USB Type-C is not backward compatible but its underlying USB standard, USB 3.1, is. This means that although USB Type-C cannot be connected to present day devices, USB 3.1 is still backward compatible with older versions of USB. The only thing that you require is a physical adapter that will have a USB type C connector on one end and a Type-A or Type-B, bigger and older, connector at the other end. You might still have to use the current Type-A and Type-B cables at the other end of the adapter for a few more years till devices with Type-C ports are adapted and they've completely outdated the current devices. Since this cable connects to almost all other new generation devices, it can be very helpful in keeping our tables clean from infinite number of cables that by the end of the day get so entwined with each other that untangling them and keeping them organised becomes a herculean task. Using USB Type-C will surely save our time and energy.

Because of its small and fragile design, there have been some questions regarding its physical design and its hollow plug and the delicate tab in the socket. Type-C still has to answer and prove its strength to the common people before it becomes common. Apart from the few questions regarding its structure, Type-C is likely to gain a lot of popularity in the next few years, though it might be a while before it reaches the popularity level of the current Type-A USB cables. But when they do, they will simplify the way we work with our devices. Type-C cables are future proof and are likely to make our day-to-day chores easier and faster. Charging your laptop while travelling in a car like we talked

about previously or charging via modes where you cannot use your current chargers, and transferring huge data like movies within a second. USB Type-C promises us all of this and paints a really good picture of the future. As far as cable clutter is concerned, you might still have to use a large number of cables but the problem of sorting them out according to their compatibility with the devices will be solved.

Devices that have already adapted this new type cable are Nokia N1 tablet, Apple's 2015 12-inch MacBook, Google's second Chromebook pixel and even the immensely popular and newly launched OnePlus 2 smartphone. With time more and more devices will adapt USB Type-C cables because of their promising features. Computers having both Type-C and older bigger ports are being built increasingly in a bid to make USB Type-C adoption quicker.

In the end, all we can say for the time being is that Type-C cables seem to be really promising and might slowly replace the present day Type-A cables rendering them obsolete in the not so distant future. 🇮🇳

*Disclaimer: The views expressed in this section are of the respective Digit Squad members. Neither Digit nor 9.9 Media takes responsibility of their claims whatsoever.*

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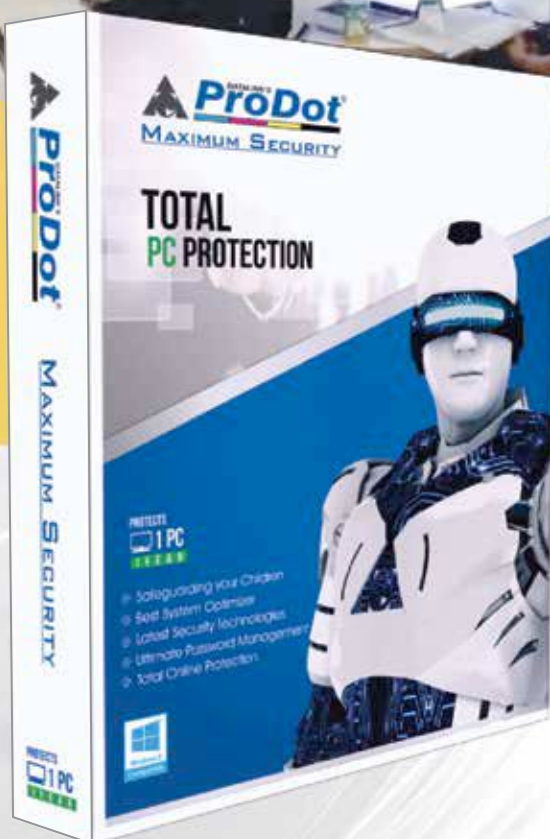
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| <ul style="list-style-type: none"> <li>Uttar Pradesh: Comexcell - +91 52240 68091 / +91 99190 10777</li> <li>Bihar: Krishna Agencies - +91 72777 79977 / +91 95340 03600</li> <li>Mumbai: Kay Kay - +91 96191 56973 / +91 22614 45600</li> <li>Delhi: Softech - +91 99100 57380 / +91 11255 01742</li> <li>Haryana: Softech - +91 99535 13865 / +91 124 4406 4921</li> </ul> | <ul style="list-style-type: none"> <li>Kolkata: Supreme Technologies - +91 98310 54752 / +91 91633 64817</li> <li>Bangalore: Jain Computers - +91 87927 79586 / +91 93412 18188</li> <li>Orissa: Print Link - +91 94370 39626 / +91 67421 16944</li> <li>Gujarat: Care Office - +91 97230 15544 / +91 79400 13000</li> <li>Uttarakhand: Comexcell - +91 135 256 3819</li> </ul> |
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